Oracle® Retail Advanced Inventory Planning

Order Management User Guide

Release 13.4

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Oracle Retail Advanced Inventory Planning Order Management User Guide, Release 13.4

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Value-Added Reseller (VAR) Language

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Contents

3 Order Management

4 Calculations

List of Tables

List of Figures

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Preface

The *Oracle Retail Advanced Inventory Planning Order Management User Guide* describes the application's user interface and how to navigate through it.

Audience

This document is intended for the users and administrators of Oracle Retail Advanced Inventory Planning. This may include merchandisers, buyers, and business analysts.

Documentation Accessibility

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Related Documents

For more information, see the following documents in the Oracle Retail Advanced Inventory Planning Release 13.4 documentation set:

- *Oracle Retail Advanced Inventory Planning Administration Guide*
- *Oracle Retail Advanced Inventory Planning Data Management Online Help*
- *Oracle Retail Advanced Inventory Planning Data Management User Guide*
- *Oracle Retail Advanced Inventory Planning Data Model Volume 1—Oracle Database Data Model*
- *Oracle Retail Advanced Inventory Planning Data Model Volume 2—Measure Reference Guide*
- *Oracle Retail Advanced Inventory Planning Implementation Guide*
- *Oracle Retail Advanced Inventory Planning Installation Guide*
- *Oracle Retail Advanced Inventory Planning Operations Guide*
- *Oracle Retail Advanced Inventory Planning Order Management Online Help*
- *Oracle Retail Advanced Inventory Planning Release Notes*
- *Oracle Retail Advanced Inventory Planning Store and Warehouse Replenishment Planning Online Help*
- *Oracle Retail Advanced Inventory Planning Store and Warehouse Replenishment Planning User Guide for the RPAS Classic Client*
- *Oracle Retail Advanced Inventory Planning Store and Warehouse Replenishment Planning User Guide for the RPAS Fusion Client*

The following documentation may also be needed when implementing AIP:

- Oracle Retail Planning Batch Script Architecture (BSA) Implementation Guide
- Oracle Retail Integration Bus (RIB) documentation, based on type of deployment
- Oracle Retail Extract Transform and Load (RETL) documentation
- Oracle Retail Predictive Application Server (RPAS) documentation

My Oracle Support Documents

These Oracle Retail Advanced Inventory Planning Release 13.4 documents are available on My Oracle Support:

- *Oracle Advanced Inventory Planning Calculations for Store and Warehouse Replenishment Planning*
- *Oracle Retail Advanced Inventory Planning SRP/WRP Replenishment Method Related Parameters*

Customer Support

To contact Oracle Customer Support, access My Oracle Support at the following URL:

https://support.oracle.com

When contacting Customer Support, please provide the following:

- Product version and program/module name
- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instructions to re-create
- Exact error message received
- Screen shots of each step you take

Review Patch Documentation

When you install the application for the first time, you install either a base release (for example, 13.4) or a later patch release (for example, 13.4.2). If you are installing the base release, additional patch, and bundled hot fix releases, read the documentation for all releases that have occurred since the base release before you begin installation. Documentation for patch and bundled hot fix releases can contain critical information related to the base release, as well as information about code changes since the base release.

Oracle Retail Documentation on the Oracle Technology Network

Documentation is packaged with each Oracle Retail product release. Oracle Retail product documentation is also available on the following Web site:

http://www.oracle.com/technology/documentation/oracle_retail.html

(Data Model documents are not available through Oracle Technology Network. These documents are packaged with released code, or you can obtain them through My Oracle Support.)

Documentation should be available on this Web site within a month after a product release.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Welcome to Oracle Retail Advanced Inventory Planning

Oracle Retail Advanced Inventory Planning (AIP) is a suite of products designed to manage the supply chain needs of retailers, from interaction with their suppliers through various layers of warehouses down to individual stores and e-commerce sites. Oracle Retail Advanced Inventory Planning couples time-phased replenishment and allocation algorithms to produce an actionable receipt plan over time, based on demand forecasts, replenishment parameters, and inventory availability at the numerous points within the supply chain.

Oracle Retail Advanced Inventory Planning provides the tactical inventory plan needed to run the business. Its purpose is to optimally forecast consumer demand, source supply, and fulfill demand in a time-phased manner. Because of Oracle Retail Advanced Inventory Planning, the supply chain is aligned into a virtual enterprise, and the retailer gains visibility across the supply chain to demand, supply, and any constraints.

Oracle Retail Advanced Inventory Planning is composed of two parts:

- Oracle Retail Data Management Online (DM)
- Oracle Retail Order Management (OM)

2

Using AIP

This chapter provides an introduction to using AIP.

Getting Started

How you access AIP depends on how the application is set up at your location. Contact your system administrator for instructions. After starting the application, you are prompted to log in. Your system administrator assigns a user name and a temporary password. You will need to change the password after you log on the first time. Additionally, you password periodically expires, in a period of time as determined by your system administrator.

The following rules apply when you change your password:

- Passwords must be a minimum of six (6) characters and maximum of 128.
- Passwords must contain at least five different characters.
- Passwords must not be simple.
  - Cannot include sequences such as ABCDE or ABCXYZ.
  - Cannot contain more than four consecutive identical characters.
- Passwords cannot be based on your user name or your full name.
- Passwords cannot be based on a previous password.
- Passwords cannot be based on a dictionary entry.

Logging on to Oracle Retail Advanced Inventory Planning (AIP)

Perform the following steps to log on to AIP:

1. On the Login window, enter your user ID in the User Name field.
2. In the Password field, enter your password.
3. Click **Log In**.
4. In the Applications area, click **AIP Online**. The User Console is displayed.

   Note: The User Console may be displayed when you log in. If this is the case, proceed to the next step.

5. Select the application you want to use.
6. Click **Start**. The application opens in a new window.

Changing Your Password

Perform the following steps to change your password:

1. Log on to Oracle Retail Advanced Inventory Planning (AIP).
2. On the User Console, click **Applications**.
3. Click **Change Password**.
4. In the Current Password field, enter the password you used to log in to the applications
5. In the New Password field, enter the password you want to use in the future.
6. In the Retype password field, enter the password you entered in the New Password field.
7. Click **Change Password**.

> **Note:** To cancel your changes, click the "Return to front page without changing password" link.

Exiting AIP

Perform the following steps to log off of AIP:

1. Click **Exit**. You are returned to the User Console.

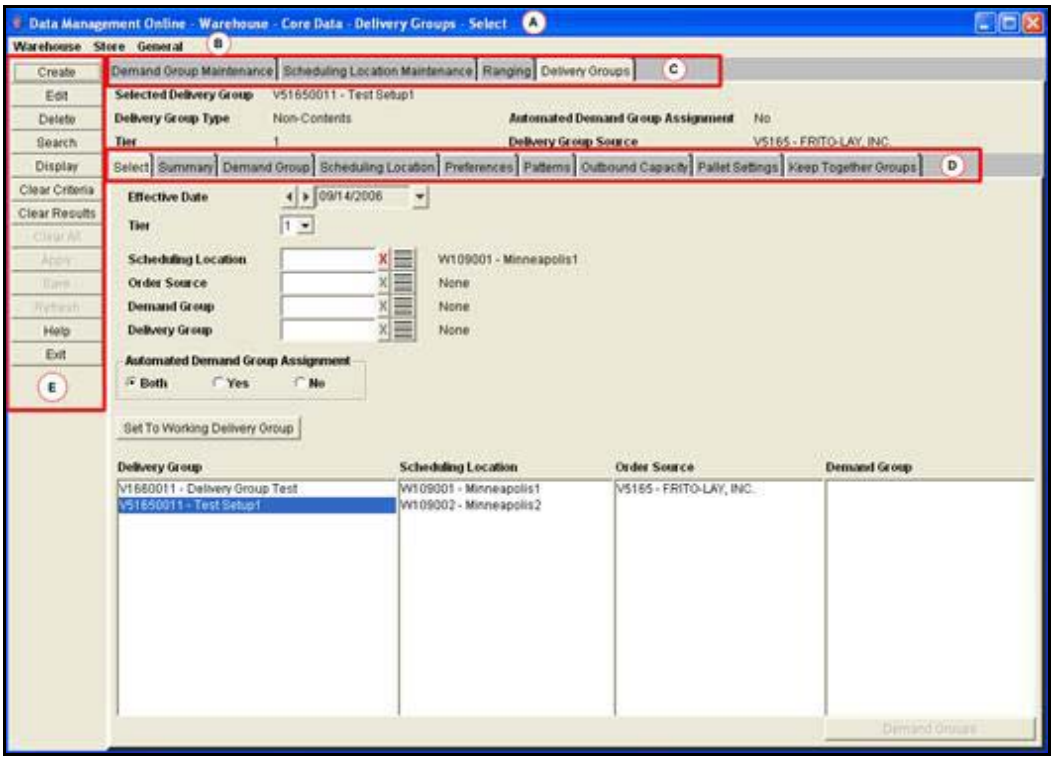
> **Note:** The Exit button is located on the standard button bar in the AIP workspace.

2. Click **Log Out**.

The AIP Workspace

After logging into AIP, you have access to the application window. The primary elements in the application window are shown in Figure 2–1.

Figure 2–1 The AIP Workspace



- A - Title Bar

  Located at the top of the application window. The title bar displays the product name and the area you are currently working in. The three buttons at the far right on the title bar allow you to minimize, restore, maximize, and close the application window.

- B - Menu Bar

  Located below the title bar. The menu bar provides access to different areas of the application.

- C - Primary Tabs

  Located at the top of the workspace. The primary tabs give you access to the functional areas available for the selections you made from the menu.

- D - Secondary Tabs

  Located in the workspace, beneath the primary tabs. The secondary tabs give you access to the functional area within each primary tab, if they exist for a specific tab.

- E - Standard Buttons

  Located at the left of the workspace. The standard buttons are enabled based on the work you have done or the selections you make in the workspace.

Navigating AIP

The basic method for entering data in a text field is to type the text in the field. Some fields, however, restrict the type of data that may be entered. The options for entering or selecting data depend on the type of data that may be required or permitted in the field. For example, some fields permit only numeric data, while others permit only alphabetic or alphanumeric data. Some fields require a date to be entered in a specific format. Some fields permit only one value, while others permit multiple values.

Calendars, drop-down lists and lists of value provide you with access to preformatted, predefined values. The following sections provide instructions for using these tools.

Using a Calendar Button

To look up the date, you can access a date picker window.

Figure 2–2 Date Picker Window

Select a Date

Perform the following steps to select a date:

1. Click the calendar button next to a date field. The calendar window opens.

   Note: The calendar button appears as a drop down button to the right of the date field.

2. Select the desired date:
   - To select a year, press the left or right arrows next to the year field.
   - To select a month, click the appropriate month abbreviation.
   - To select a day of the month, click the day on the calendar.
3. Click **OK**. The date field is automatically filled in when you select the day of the month.

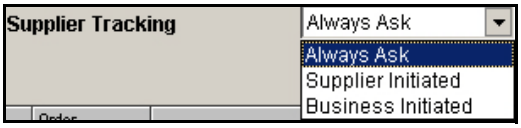
Move the Date

You can move the selected date forward or backward.

Using a Drop-down List

Some fields are restricted to a predefined list of values. You access a drop-down list from which you can pick the desired value.

Figure 2–3 Drop-down List



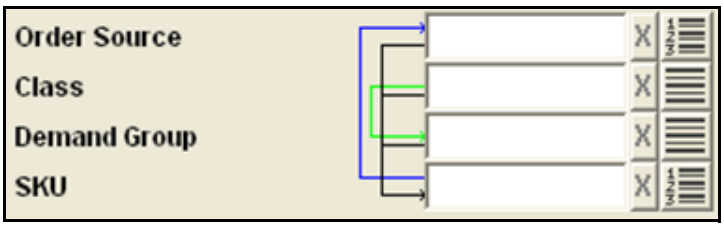
1. Click the drop-down button next to a field. A list of predefined values appears.
2. If necessary, scroll through the list until the appropriate value appears.
3. Select the value. The field is automatically filled in with the selected value.

Field-Level Filtering in AIP

Some fields are filtered by the selections you have made in a previous field. These fields are indicated by arrows pointing to them from other fields.

Note: Any fields that are required when searching are indicated with an asterisk (*).

Figure 2–4 Example of Field Level Filters



In the example:

Table 2–1 Example of Field Level Filters

Field Name	Results in Limits To	Indicated By
Order Source, Class, and Demand Group	SKU	Black arrow
Class	Demand Group	Green arrow
SKU	Order Source	Blue arrow

Note: The colors indicated are specific to this example. The arrows in the window you are working in may be colored differently and serve only to help you distinguish the different lines.

Clear a Selection

After you make a selection, the clear List of Values (LOV) button is enabled. If two fields filter each other as part of a field-level filter, you must clear your selections before you can make additional selections. To clear the field, click the LOV button.

Figure 2–5 Locked Filter Field

Sorting Rules

When certain elements are selected, related fields are filtered to only display data corresponding with the selected element. The following sections detail the impact of selection on these related fields.

Demand Group

When Demand Group is selected, the following field is filtered:

- SKU - Filtered to only display SKUs having a pack-size in the selected demand group.

Profile

When Profile is selected, the following field is filtered:

- Class - Filtered to only display classes containing a SKU assigned to the selected profile.

SKU

When SKU is selected, the following fields are filtered:

- Demand Group - Filtered to only display demand groups containing a pack-size of the selected SKU.
- Order Source - Filtered to only display suppliers that supply a pack-size of the selected SKU, and warehouses that are ranged for a pack-size of the selected SKU.

Class

When Class is selected, the following fields are filtered:

- Demand Group - Filtered to only display demand groups containing a SKU belonging to the selected class.
- SKU - Filtered to only display SKUs belonging to the selected class.

Supplier

When Supplier is selected, the following fields are filtered:

- Demand Group - Filtered to only display demand groups containing a SKU pack-size that is supplied by the selected supplier.
- SKU - Filtered to only display SKUs having a pack-size supplied by the selected supplier.
- Class - Filtered to only display classes containing a SKU that has a pack-size supplied by the selected supplier.

Order Source

When Order Source is selected, the following field is filtered:

- SKU - If the selected order source is a supplier, SKU is filtered to only display SKUs having a pack-size supplied by the supplier. If the selected order source is a warehouse, SKU is filtered to only display SKUs having a pack-size ranged to the warehouse.

Store Format

When Store Format is selected, the following field is filtered:

- Store - Filtered to only display stores of the selected store format.

Warehouse

When Warehouse is selected, the following field is filtered:

- SKU - Filtered to only display SKUs that are ranged to the selected warehouse.

List of Values (LOV) Buttons

Some fields need to filter a large amount of information. To help you select the information, there are two types of LOV buttons:

- LOV buttons: Allow you to pick from a list of valid data that can be used in the field. The LOV button only allows you to make one selection.
- Multi-select LOV buttons: For fields that permit multiple values, you can access a list of values window in multi-select view. The box contains two blocks. One block contains the predefined values that are available to you. The second block contains the values that have already been assigned to the field, if any. You have the option of:
  1. Removing assigned values, which places them back in the available list.
  2. Adding values, which places them in the selected list.

When a multi-select LOV button has multiple values selected, the first value that was selected is displayed followed by an ellipse.

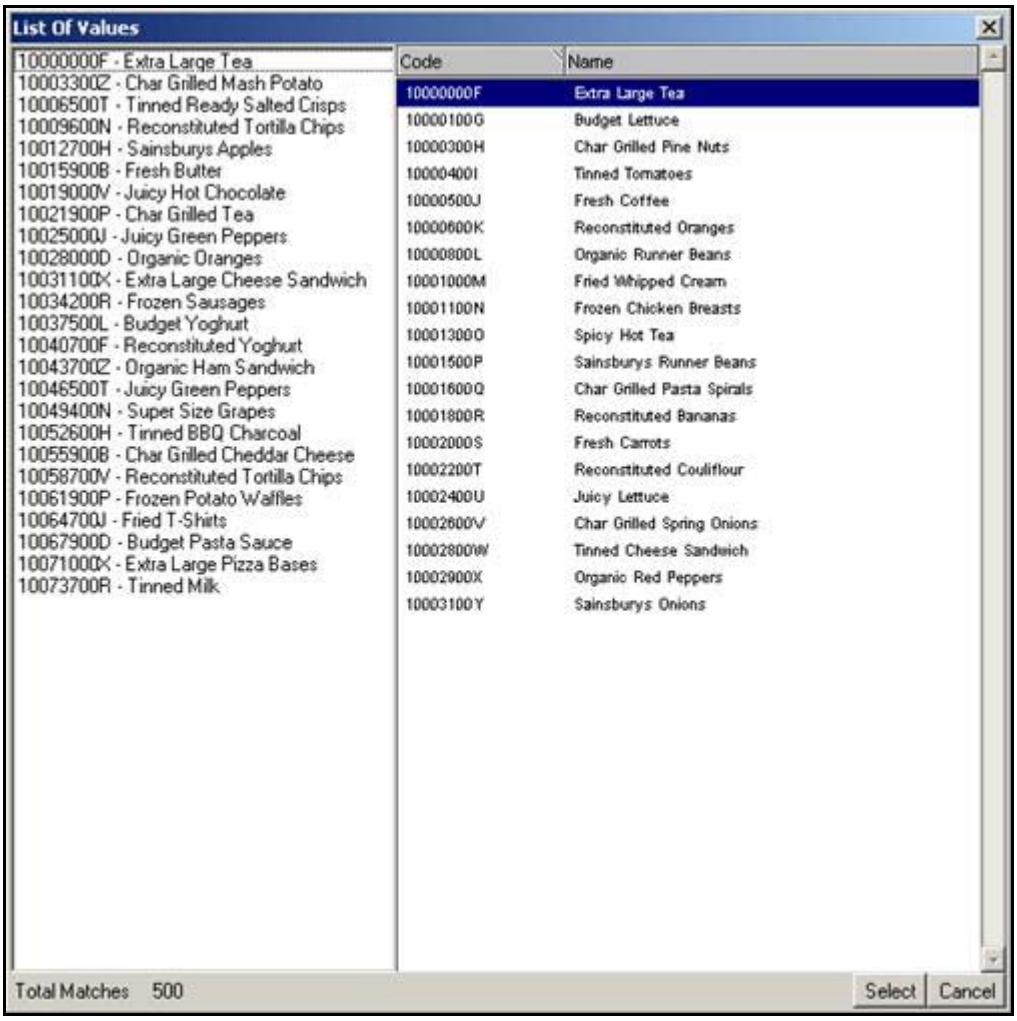
The list of values window displays the first set of 20 values and a paging mechanism. To view additional sets of information, select from the list on the left side.

Using the LOV Button

Perform the following steps to use the LOV button:

1. Click the LOV button next to a text field. The List of Values Window opens. The total number of values appears on the footer of the window.

Figure 2–6 List of Values Window



Note: You can enter information into the field before you click the LOV button. A partial list of values is return that matches the information you entered. If you enter a complete, valid value and press Enter, the information is displayed without opening the list of values window.

---

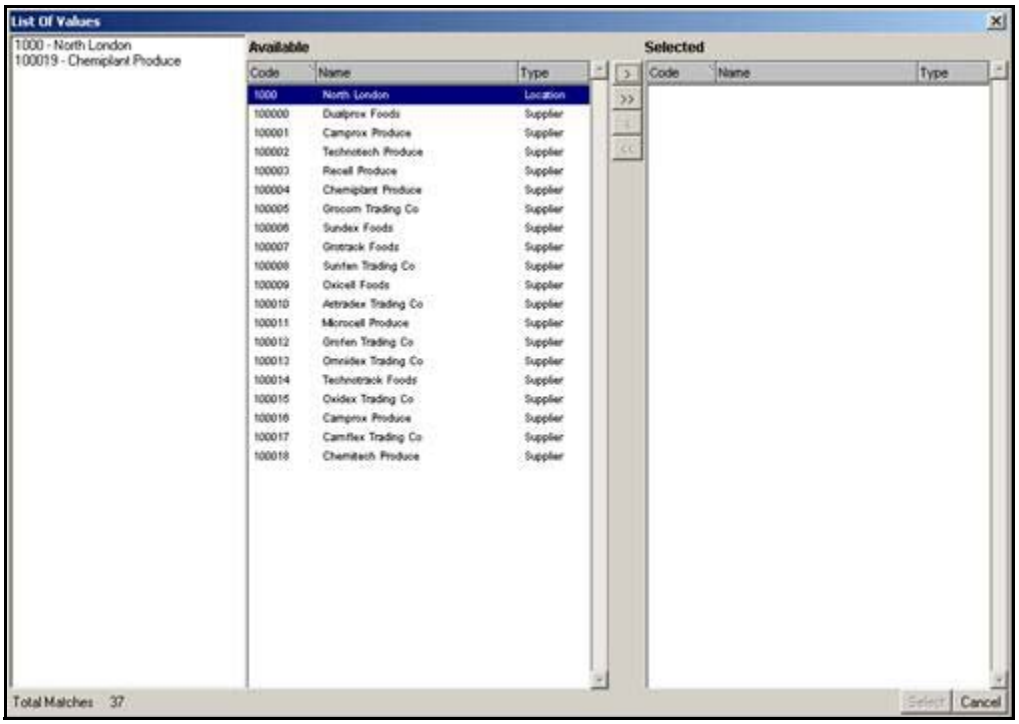
2. Select a value. Page as necessary to find your value.
3. Click **Select**. The field is automatically filled in with the selected value.

Using a Multi-Select LOV Button

Perform the following steps to use the multi-select LOV button:

1. Click the multi-select LOV button next to a text field. The list of values window opens. The total number of values appears on the footer of the window.

Figure 2–7 List of Values Window - Multi-select View



Note: You can enter information into the field before you click the multi-select LOV button. A partial list of values is returned that matches the information you entered. If you enter a complete valid value and press Enter, the information is displayed without opening the list of values window.

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2. Select the appropriate values:
   - Select one or more values in the selected values box. Page as necessary to find your value.
   - Click the move right button. The values are displayed in the selected values box.

Note: To move all values displayed in the available area, click the move all right button.

---

3. Remove unneeded values:
   - Select one or more values in the selected values box.
   - Click the move left button. The values are removed from the selected values box

   Note: To move all values displayed in the selected area, click the move all left button.

4. Click **Select**. The field is automatically filled in with the selected values.

Transfer Boxes

For fields that permit multiple values, you can use a transfer box. The box contains two blocks. One block contains the predefined values that are available to you. The second block contains the values that have already been assigned to the field, if any. You have the option of:

1. Removing assigned values, which places them in the available list.
2. Adding values, which places them in the selected list.

Using a Transfer Box

Perform the following steps to use a transfer box:

1. Select the appropriate values:
   - Select one or more values in the available values box.
   - Click the move right button. The values are moved to the selected values box.

   Note: To move all displayed values, click the move all right button.

2. Remove Unneeded Values:
   a. Select one or more values in the selected values box.
   b. Click the move left button. The values are returned to the available values list.

   Note: To move all displayed values, click the move all left button.

Moving Top Level Folders and Folder Components

Perform the following steps to move top level folders and folder components:

- Select the top level folder to move the folder and all components contained within the folder.
- Select the individual component of the folder to move the folder component without including the entire folder.

Sorting a Table

In a table you can sort the results:

- To sort the list, click any column heading. Hatch marks indicate the column that is currently sorted as well as the order: ascending or descending.
- To reverse the current sort order, click the same column heading again.
- To sort on multiple columns, where allowed, click the column heading to select the sort order and then right-click the column heading. The column heading turns red to indicate the column is locked. Repeat this process for other columns displayed on screen.

Figure 2–8 Example of Table Data Sorted by Multiple Columns - Alert Status and Priority

Paging through Records

On some tabs, like the Alerts tab where numerous records may be displayed, paging controls appear at the bottom of the tab. This feature allows you to page through the records as needed. The total number of pages appears to the left of the paging controls.

Figure 2–9 Example of Paging Controls

Using the Paging Controls

Perform the following steps to use the paging controls:

- To page forward, click **Next**. The next page of records appears.
- To page backward, click **Previous**. The previous page of records appears.
- To view the first page of records, click **First Page**. The first page of records appears.
- To view the last page of records, click **Last Page**. The last page of records appears.

Using the Online Help

The following sections provide information about the online help for Oracle Retail Advanced Inventory Planning.

About the Online Help

The online help system uses JavaScript for some of its functionality. Make sure you have enabled JavaScript for your Web browser. Refer to the online help in your Web browser for instructions on enabling JavaScript.

Introduction

The help site provides step-by-step procedures as well as other information about using Oracle Retail Advanced Inventory Planning. We have implemented some tools to assist your navigation of the help site. The following sections explain these tools.

Formatting Conventions

This section provides information about the documentation conventions used in the online help.

Note: Notes are displayed using this convention. Notes contain additional information about the process or procedure that you are performing.

Navigate: The navigation sections of a procedure provide information about how to access the window that is the starting point of a procedure.

Navigating the Online Help

The help site provides several ways for you to navigate to your topic.

Using the Table of Contents

The table of contents is the most common way that you will navigate to your topic.

1. Select the Contents tab to display the table of contents on the left side of your screen.
2. Double-click a book to expand it and view the topics.
3. Select a topic from the table of contents to view it.

Using the Search Feature

Use the search feature to explore the contents of your topics and find matches to queries that you define. There are some basic rules for making queries in full-text searches.

- You can type your search in uppercase or lowercase characters. Searches are not case sensitive.
- You can search for any combination of letters (a-z) and numbers (0-9).
- Punctuation marks such as the period, colon, semicolon, comma, and hyphen are ignored during a search.
- Group the elements of your search using double quotes or parentheses.
- You cannot search for quotation marks.

Follow this procedure to use the search feature.

1. Select the Search tab to display the search feature on the left side of your screen.
2. In the Search field, enter the word or words that you want to find.
3. Press **Enter**. Topics that match your search criteria display in the left pane.
4. Select a topic to view it.

3

Order Management

This chapter provides general information about using Order Management.

Introduction to Oracle Retail Order Management

Order management allows you to create, edit, and view orders from suppliers and warehouses. An order can be a purchase order or a transfer.

- Purchase orders are orders sourced directly from suppliers.
- Transfers are orders sourced directly from a warehouse.

Orders exist in Order Management as a result of the following processes.

- You can manually create a purchase order in order management.
- Orders are automatically generated by AIP.

Order Quantities

When you create or edit an order, there are several rules that apply to the quantity you enter:

- The quantity must be greater than zero.
- You must order a full case or SKU-pack-size.
- If you use eaches as your order quantity, you must order multiples of a full SKU-pack-size.

> **Note:** As best practice, Oracle Retail recommends ordering in quantities that complete the pallet/order multiple. If you order a quantity that is not a valid pallet/order multiple, you will receive a warning.

Security

You are assigned permissions to the windows in Order Management by your system administrator. The windows and buttons that are available depend on your system settings. Contact your system administrator for details.

Create an Order

The Order Creation window allows you to manually create into-store and into-warehouse purchase orders. When you create purchase orders, you can enter quantities as cases or eaches.

After you create a purchase order, the purchase order is displayed on the table in green until it is saved.

Once you save a purchase order, it is:

- Validated against the destination's order cycle.
- Validated for the destination's ability to receive.
- Verified for valid release dates.
- Released immediately to the merchandising system.

Conditions to Create a Purchase Order

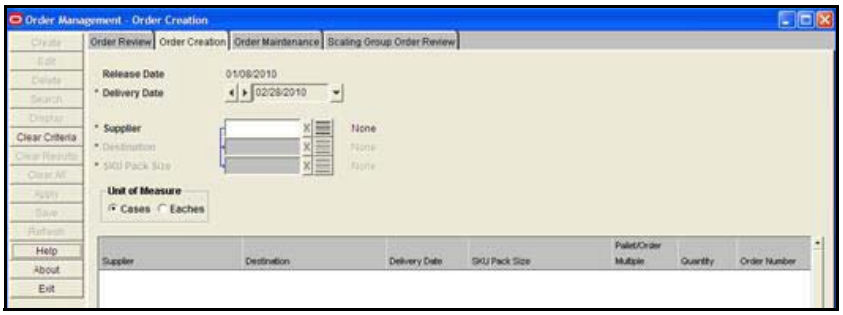
The following conditions must be met before you can create a purchase order for a warehouse:

- The source of the order must be a supplier.
- The warehouse selected for the purchase order has a chamber in either release or closing down status and the warehouse is ranged for the SKU type.

Create a Purchase Order

Navigate: Log in to Order Management. Select the Order Creation tab.

Figure 3–1 Order Creation Tab



1. In the Delivery Date field, select the date you want the order delivered.
2. In the Supplier field, enter a supplier ID, or click the LOV button and select the supplier.
3. In the Destination field, enter the destination ID, or click the LOV button and select a destination from the list.

   Note: All destinations with ranged or on-supply SKU pack-sizes from the supplier are displayed.

4. In the SKU Pack-size field, enter the SKU pack-size you want to order, or click the LOV button and select a SKU pack-size from the list.

5. In the Unit of Measure area, select how you want to enter the order quantity for this purchase order.
6. Click **Create**. This populates the table with the purchase order information.

> **Note:** An unsaved order with the same supplier, destination, SKU-pack, and delivery date cannot be duplicated.

7. In the Quantity field, double-click the column to enter the quantity for the purchase order.

> **Note:** If you are ordering by eaches, you must enter multiples of the pack-size.

8. To delete an unsaved purchase order:
   a. Select the order.
   b. Click **Delete**. The purchase order is removed from the table.
9. Click **Save**. You are prompted to confirm your decision.
10. Click **OK**. An order number is assigned to your purchase order.

Maintain Orders

The Order Maintenance window allows you to maintain, cancel, and release purchase orders for:

- Into-store orders
- Into-warehouse orders

Into-store and into-warehouse orders are displayed in Order Management if they are created manually or are automatically generated by AIP. The orders can be purchase orders or transfers, with received or un-received quantities. On the Order Maintenance window, the pallet/order multiple for the order is displayed in the lower right corner of the window when you select an order.

Any purchase orders with unsaved changes are displayed in green. Once you save a purchase order, your changes are immediately communicated to the merchandising system.

About Maintaining Your Orders

The AIP Online system can be configured to limit the functions a user can perform from the Order Maintenance tab. Based on the AIP configuration implemented at your location, the following functions may not be allowed or may be limited:

- The ability to move un-received quantities of an order.
- The ability to move un-received order quantities if the line item has an open order status and either:
  - the received quantity is less than the total quantity

    or
  - the received quantity is zero.

- The ability to change the order destination when moving order quantities.
- The ability to input or require a new order number when moving an order. If a new order number is not required, users are allowed to choose whether to retain the existing order number or generate a new one when moving un-received order quantities.
- The ability to cancel un-received order quantities.
- The ability to release unreleased orders.
- The ability to edit the quantities or purchase orders.
- The ability to view all orders. The screen may only display purchase orders, only transfers, or both purchase orders and transfers.

This section provides the procedures to perform all tasks available through the Order Maintenance tab, but the tasks you can perform or the options displayed on your system may vary based on your system configuration.

Purchase Orders

When you edit an open or overdue order, you can move the un-received quantity on a purchase order, so that the un-received quantity arrives on a new date or to a new destination. Alternatively, you can edit any un-received quantity on the purchase order. You cannot move a purchase order that has been completely received.

To cancel un-received quantities, your purchase order must be open or overdue. Additionally, the purchase order cannot be fully received.

Release a Purchase Order

You can manually release purchase orders that are forecasted. Once you release a purchase order, it is:

- Verified that the warehouse selected for the purchase order has a chamber in release or closing down status and the warehouse is ranged for the SKU type.

  Note: This verification occurs only for warehouse destination types.

- Assigned an order number.
- Released immediately to the merchandising system.

Move a Purchase Order

The following conditions must be met when you move a purchase order with a warehouse destination type:

- The new warehouse selected for the purchase order has a chamber in release or closing down status and the warehouse is ranged for the SKU type.

When you are working with purchase orders, to retain a purchase order number you must select the entire order. To do so, in your search criteria you must:

- Select the Entire Order, and Tree view. On the results table, select the folder.
- Select the Entire Order and Grid. To retain purchase orders at this level, your system settings must be set up to define order numbers at the order source, destination, SKU-pack, and delivery date.

- Select the Matching Line Item and Grid. To retain purchase orders at this level, your system settings must be set up to define order numbers at the order source, destination, SKU-pack, and delivery date.

The status of a purchase order can provide you with various types of information. Purchase orders can exist in several statuses:

- Open: The order has been released.
- Overdue: The order has received less than the total order quantity and the delivery date has passed.
- Closed: The merchandising system has set the status to Closed.

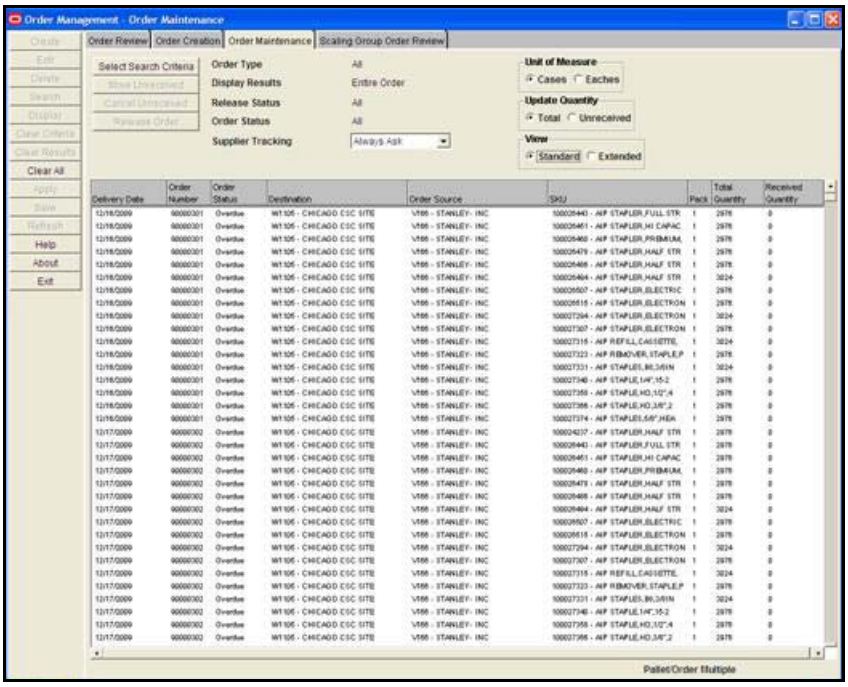
Transfers

Transfers can only be viewed from the Order Maintenance window. You cannot edit, release, or move the dates or destinations of a transfer.

Search for Orders

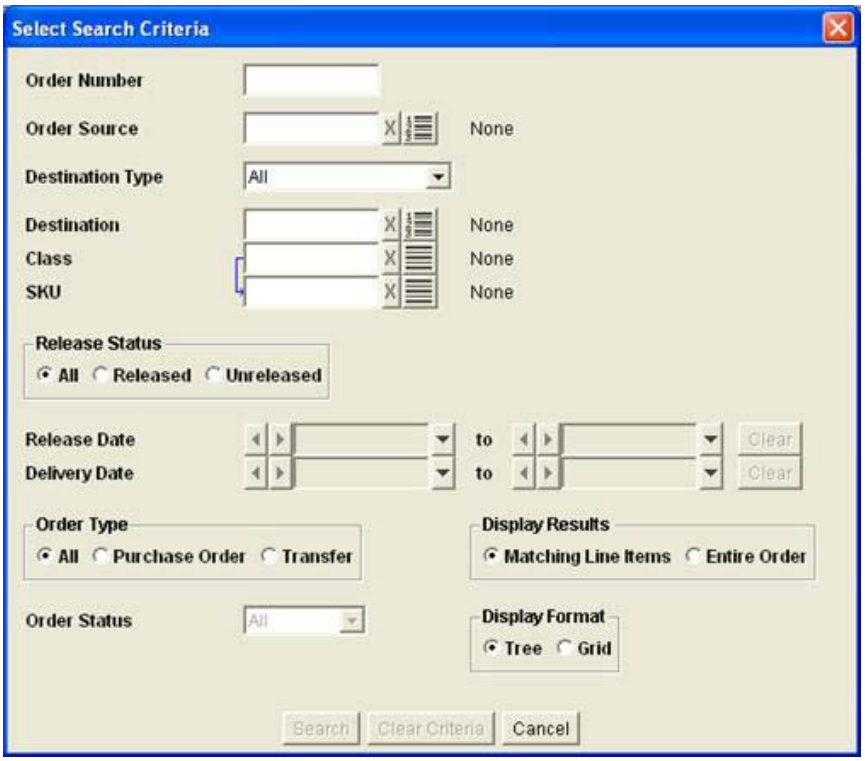
Navigate: Log in to Order Management. Select the Order Maintenance Tab.

Figure 3–2 Order Maintenance Tab



1. Click **Select Search Criteria**. The Select Search Criteria Window opens.

Figure 3–3 Select Search Criteria Window



2. Enter your search criteria as necessary, choosing one of the following options:
   - Order Number. No other criteria required.
   - Select one option from each column in Table 3–1.

Table 3–1 Select Search Criteria Fields

Select One Option in this Column:	And Select One Option in this Column:
Order Source and Destination	Release Dates **Note:** Available dates are limited by the order purging period and release status selections.
Order Source and Destination Type (Any selection except all)	Delivery Dates **Note:** Available dates are limited by the order purging period and release status selections.
SKU	Order Status **Note:** This field is available only if you have selected Released in the Release Status area.

3. You may select additional information to limit your search:
   - Display Results: Select how you want to view the results:
     - Matching Line Items returns line items that meet the search criteria.
     - Entire Order returns orders that contain the line items that meet the search criteria.
   - Display Format: Select how you want to view the results:
     - Tree to display the line items under the common order number.
     - Grid to display the line items in a table format.
4. Click **Search**.

Edit a Purchase Order Quantity

Navigate: Log in to Order Management. Select the Order Maintenance tab.

1. Search for and retrieve a purchase order.

   Note: If you are working in a tree structure, double-click the folder to display the line items contained in the purchase order.

2. In the Quantity field, double-click the quantity number to enter the quantity for the order.

   Note: The Quantity column is determined by the view selected in the Update Quantity area. For more information, see the Change display setting of orders procedure.

3. Save your purchase order.

Change the Display Settings of Orders

Navigate: Log in to Order Management. Select the Order Maintenance tab.

1. Search for and retrieve a purchase order.

   Note: If you are working in a tree structure, double-click the folder to display the line items contained in the order.

2. In the grid view of the search table you can sort the results:
   - To sort the list, click any column heading. Hatch marks indicate the column that is currently sorted as well as the order: ascending or descending.
   - To reverse the current sort order, click the same column heading again.
   - To lock the column that has been filtered, right-click the header. It turns red.

     Note: Once you lock a column, you can sort additional column by clicking on the appropriate column header.

- To unlock the column, right-click it again.

3. In the Unit of Measure area select:
   - Cases displays the order quantity in cases.
   - Eaches displays the order quantity in eaches.
4. In the Update Quantity area, select:
   - Total displays the total order quantity and enables you to edit the total quantity.
   - Un-received displays the un-received quantity and enables you to edit the un-received quantity.
5. In the View area, select the view you want to use to display the following columns:

Standard	Extended
Delivery Date	Delivery Date
Order Number	Order Number
Order Status	Order Status
Destination	Destination
Order Source	Order Source
SKU	Class
Pack	SKU
Quantity (Total/Un-received)	Pack
Received Quantity	Pre-scaled Quantity
	Quantity (Total/Un-received)
	Received Quantity
	Supplier Tracking
	Release Date

6. If you are working in tree view, select the Expand All check box to view all line items in all orders.

Move an Un-received Order

Navigate: Log in to Order Management. Select the Order Maintenance tab.

1. Search for and retrieve a purchase order.

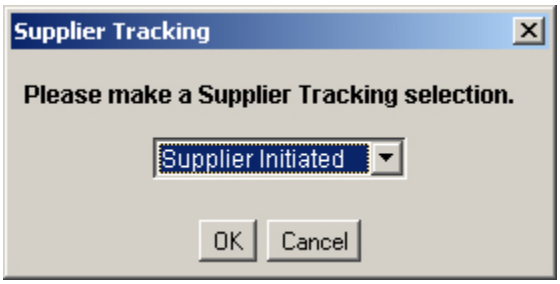
   Note: If you are working in a tree structure, double-click the folder to display the line items contained in the order.

2. Select what you want to move:
   - Select the line items of an order you want to move.
   - Select the entire purchase order.

   Note: All line items must meet the receive criteria in order to move the purchase order.

3. Click **Move Un-received**. The Supplier Tracking window opens.

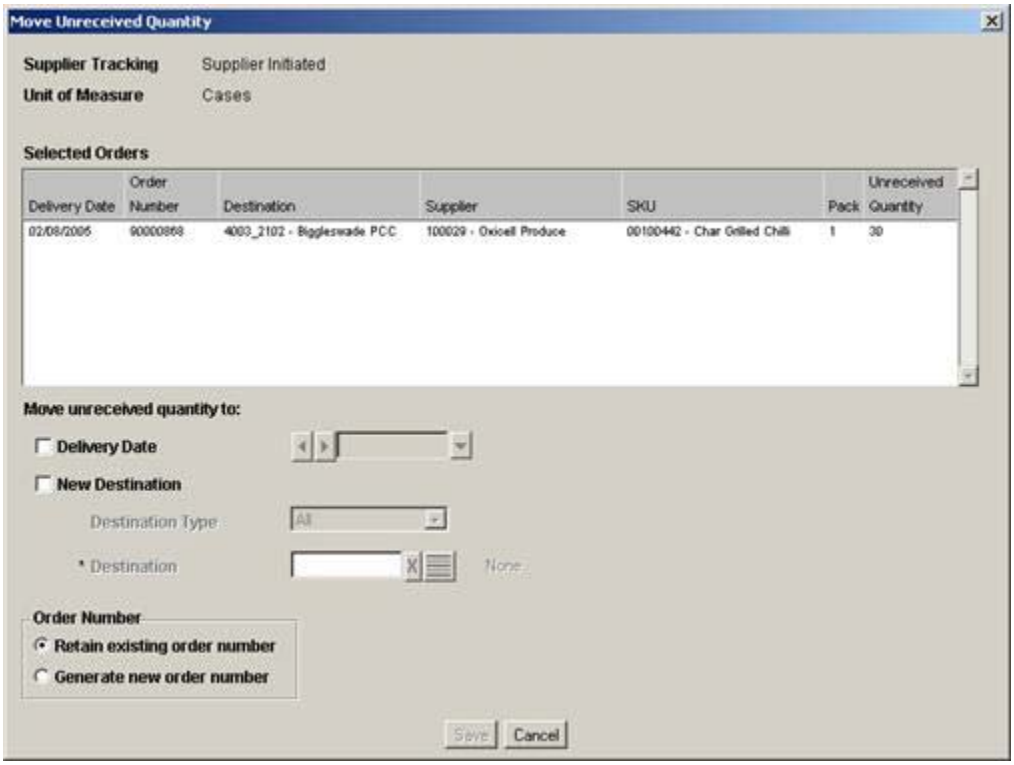
Figure 3–4 Supplier Tracking Window



Note: This window opens only when Always Ask is selected in the Supplier Tracking field in the Order Maintenance window.

4. Enter Supplier Tracking selection.
5. Click **OK**. The Move Un-received Quantity window opens.

Figure 3–5 Move Un-received Quantity Window



6. To change the delivery date of the un-received quantity:
   a. Select the Delivery Date check box.
   b. In the next field, select the new date using the calendar button.

7. To change the destination of the un-received quantity:
   a. Select the New Destination check box.
   b. In the Destination Type field, select the type of location receiving the quantity.
   c. In the Destination field, enter the Destination ID, or click the Destination LOV and select a destination.
8. In the Order Number area select:
   a. Retain existing order number to use the same order number for the new order.

      Note: This option is only available if the entire purchase order was selected in the Order Maintenance window.

   b. Generate new order number to create a new order number.
9. Click **Save**. You are prompted to confirm your decision.
10. Click **OK**. Your order is saved.

    Note: Once you confirm your decision to save, the original purchase order or line item is closed and can no longer be updated.

Cancel Un-received Quantities on a Purchase Order

Navigate: Log in to Order Management. Select the Order Maintenance tab.

1. Search for and retrieve a purchase order.

   Note: If you are working in a tree structure, double-click the folder to display the line items contained in the purchase order.

2. Select the line items or orders that you want to cancel.

   Note: All line items must meet the receive criteria in order to move the purchase order.

3. Click **Cancel Un-received**. You are prompted to confirm your decision.
4. Click **OK**. Your order is displayed in green and must be saved.

Release a Forecasted Purchase Order

Navigate: Log in to Order Management. Select the Order Maintenance tab.

1. Search for and retrieve an unreleased purchase order with Forecast in the Order Number field.

   Note: If you are working in a tree structure, double-click the folder to display the line items contained in the purchase order.

2. Select the line items or purchase orders that you want to release.

   Note: All line items must meet the receive criteria in order to move the purchase order.

3. Click **Release Order**. You are prompted to confirm your decision.
4. Click **OK**. Your order is displayed in green and must be saved.

Save a Purchase Order

Navigate: Log in to Order Management. Select the Order Maintenance tab.

1. Search for and retrieve a purchase order.
2. Complete your work with the purchase order.
3. Click **Save**.

   Note: If you have modified a released order and selected Always Ask, the Supplier Tracking window opens

4. In the Supplier Tracking field select:
   - Supplier Initiated indicates that order changes were caused by the supplier.
   - Business Initiated indicates that order changes were caused by the retailer.

   Note: This window opens if you have not already specified supplier tracking in the Order Maintenance window.

5. Click **OK**.

Review Orders

The Order Review tab allows you to review released and unreleased into-store and into-warehouse orders. Orders are available for review until they are a specified number of days past their release or delivery date. Your system administrator specifies the number of days that orders remain available.

Visual clues will help you understand the order status:

- Quantities in parenthesis: The purchase order is unreleased. If multiple orders are represented, the quantity displayed is the unreleased amount across purchase orders.
- Quantities in brackets: For multiple orders, indicates that released and unreleased quantities exist across purchase orders.
- Quantities in red: The purchase order is overdue.

You can review existing orders in Order Management through the Order Review window. The window displays time from left to right across the window. The time periods displayed are determined by your selection in the Select Search Criteria window. You can change the data displayed in the table by updating the information selected in the dynamic fields located in the upper left corner of the window. When you select a cell, information about the order is displayed below the table. Quantities displayed may apply to a single order or multiple orders.

Search results are displayed in numeric order as a result of your selection in the Display in Rows field on the Search Criteria window. The table rows provide a view to the destination, order source, or the SKU-pack-size on the order over the period of time you select.

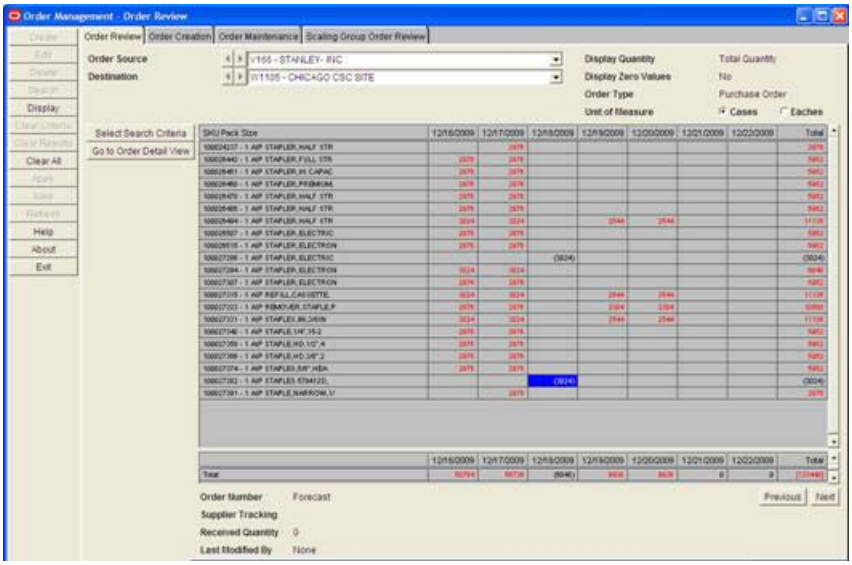
After you search, you may focus your search by selecting a cell and redefining your search by date. This allows you to perfect your search and examine the orders at an appropriate level.

Note: The AIP Online system can be configured to limit the type of orders user can view. Based on your system configuration, the screen may only display purchase orders, only transfers, or both purchase orders and transfers. This section provides the procedures to perform all tasks available through the Order Review tab, but the tasks you can perform or the options displayed on your system may vary based on your system configuration.

Search for Orders and Transfers

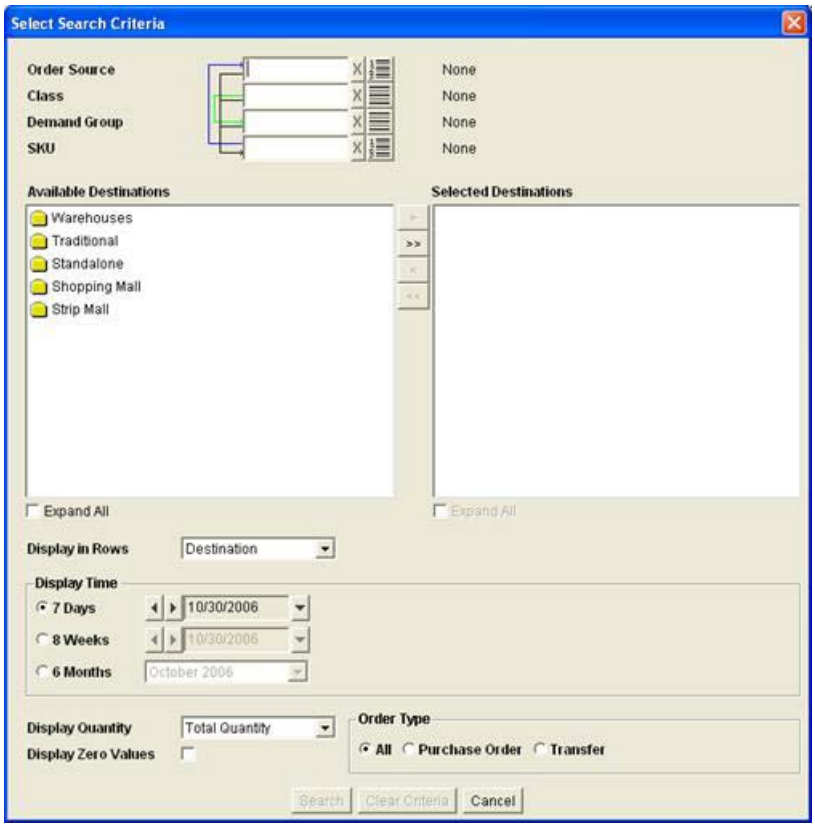
Navigate: Log in to Order Management. Select the Order Review tab.

Figure 3–6 Order Review Tab



1. Click **Select Search Criteria**. The Select Search Criteria window opens.

Figure 3–7 Select Search Criteria Window



2. Enter criteria as necessary to retrieve orders.

Field	Description
Order Source	Select the origin of the items on the order.
Class	Select the type of SKUs on the order.
Demand Group	Select the demand group you want to search by.
SKU	Select the SKU on the order.

Note: You must select criteria in one of the previously listed fields and at least one destination.

3. In the Available Destination area:
   - Select the destinations you want to view orders and transfers for:
     - Click the move right button to move the destination to the Selected Destinations area.
     - Click the move all right arrow button to move all destinations to the Selected Destinations area.

Note: If you do not want a location that is in the Selected Destinations area, use the move left button or move all left button.

4. In the Display in Rows field, select the information you want displayed in the rows of the table:
   - Destination: The warehouse or store the order arrives to.
   - Order Source: The origin of the order.
   - SKU Pack-size: The item on the order.
5. In the Display Time area, select the time period you want displayed for the orders.
   - In the field to the right of the display time select the date or month you want the time period to start from.
6. In the Display Quantity field, select the type of quantity you want displayed in the quantity field.
7. Select the Display Zero Values check box to view zero quantities.

Note: For easier viewing, you may choose not to view zero quantities.

8. In the Order Type area, select what you want to view:
   - All: Both orders and transfers are displayed.
   - Orders: Only orders that have a supplier as a source are displayed.
   - Transfers: Only orders that have a warehouse as a source are displayed.
9. Click **Search** to display the orders that match the initial results.

Refine Your Search Results

Navigate: Log in to Order Management. Select the Order Review tab.

1. Search for orders and transfers.
2. Select an order quantity on the table.
3. Click **Select Search Criteria**. The Select Search Criteria window opens.
4. Refine your search results as necessary. Information displayed in the date fields is determined by the cell selected in the table.
5. Click **Search** to display the new orders that match the initial results.

View Orders and Transfers

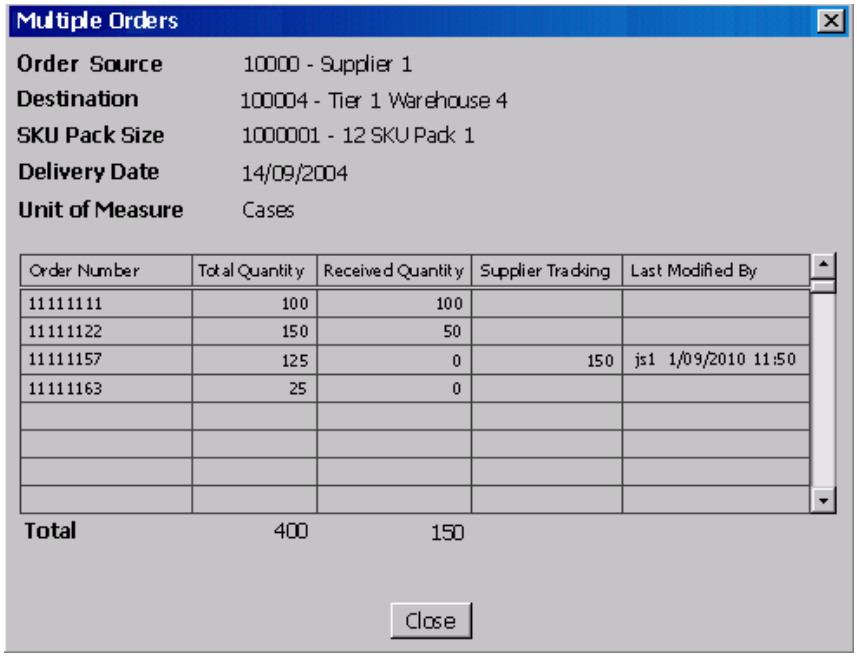
Navigate: Log in to Order Management. Select the Order Review tab.

1. Search for orders and transfers.
2. In the dynamic fields, use the arrows or drop-down arrow to select the supplier you want to view orders for.

   Note: The fields contain Destinations, Order Sources, or SKU-pack-sizes, depending on your selection in the Display in Rows field on the Select Search Criteria window.

   - Click **Display** to view matching order information.
3. To view additional dates:
   - Click **Next** to view dates after the dates currently displayed.
   - Click **Previous** to view dates before the dates currently displayed.
4. In the Unit of Measure field, select the appropriate measure to view the quantities.
5. To view order details for multiple orders:
   a. Select an order quantity with multiple orders.
   b. Double-click the order quantity. The Multiple Orders window opens.

Figure 3–8 Multiple Orders Window



c. Click **Close** to return to the search results.

Edit and View Order Details

Navigate: Log in to Order Management. Select the Order Review tab.

1. Search for orders and transfers.
2. Select an order/transfer quantity.
3. Click **Go to Order Detail View**. The Order Maintenance tab opens with your order displayed.

> **Note:** You must have security permissions to edit or view an order on the Order Maintenance window.

4. Edit or view the order as necessary.

Review Orders by Scaling Group

The Scaling Group Order Review tab allows you to:

- View orders for a particular Scaling Group and Order date
- Show pre- and post-scaling totals
- View the SKU details used for scaling

The Scaling Group Order Review tab assists you in viewing and resolving Alerted scaling group/release days that either haven't met the minimums or have not been scaled at all due to missing SKU details.

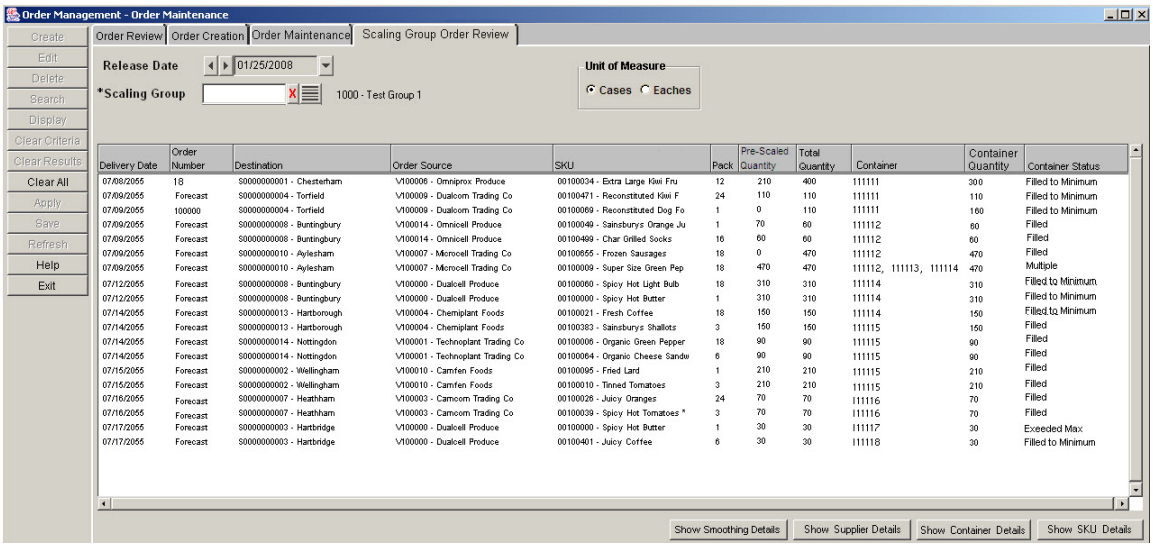
When Container Scaling is run, the provided container information always reflects the information resulting from the batch. User order modifications are reflected in the order itself but not the container, container quantities, and status.

Viewing Orders

To view today's Scaling Group Assignments with a specific release date, perform the following instructions.

Navigate: Log in to Order Management. Select the Scaling Group Order Review tab.

Figure 3–9 Scaling Group Order Review Tab



Delivery Date	Order Number	Destination	Order Source	SKU	Pack	Pre-Scaled Quantity	Total Quantity	Container	Container Quantity	Container Status
07/08/2055	18	S0000000001 - Chesterham	V100006 - Omniprox Produce	00100034 - Extra Large Kiwi Fru	12	210	400	111111	300	Filled to Minimum
07/09/2055	Forecast	S0000000004 - Torfield	V100009 - Dualcom Trading Co	00100471 - Reconstituted Kiwi F	24	110	110	111111	110	Filled to Minimum
07/09/2055	100000	S0000000004 - Torfield	V100009 - Dualcom Trading Co	00100069 - Reconstituted Dog Fo	1	0	110	111111	160	Filled to Minimum
07/09/2055	Forecast	S0000000008 - Buntingbury	V100014 - Omnicell Produce	00100049 - Sainsburys Orange Ju	1	70	60	111112	60	Filled
07/09/2055	Forecast	S0000000008 - Buntingbury	V100014 - Omnicell Produce	00100499 - Char Grilled Socks	16	60	60	111112	60	Filled
07/09/2055	Forecast	S0000000010 - Aylesham	V100007 - Microcell Trading Co	00100655 - Frozen Sausages	18	0	470	111112	470	Filled
07/09/2055	Forecast	S0000000010 - Aylesham	V100007 - Microcell Trading Co	00100009 - Super Size Green Pep	18	470	470	111112, 111113, 111114	470	Multiple
07/12/2055	Forecast	S0000000008 - Buntingbury	V100000 - Dualcell Produce	00100060 - Spicy Hot Light Bulb	18	310	310	111114	310	Filled to Minimum
07/12/2055	Forecast	S0000000008 - Buntingbury	V100000 - Dualcell Produce	00100000 - Spicy Hot Butter	1	310	310	111114	310	Filled to Minimum
07/14/2055	Forecast	S0000000013 - Hartborough	V100004 - Chemiplant Foods	00100021 - Fresh Coffee	18	150	150	111114	150	Filled to Minimum
07/14/2055	Forecast	S0000000013 - Hartborough	V100004 - Chemiplant Foods	00100383 - Sainsburys Shallots	3	150	150	111115	150	Filled
07/14/2055	Forecast	S0000000014 - Nottingdon	V100001 - Technoplant Trading Co	00100006 - Organic Green Pepper	18	90	90	111115	90	Filled
07/14/2055	Forecast	S0000000014 - Nottingdon	V100001 - Technoplant Trading Co	00100064 - Organic Cheese Sandw	6	90	90	111115	90	Filled
07/16/2055	Forecast	S0000000002 - Wellingham	V100010 - Camfen Foods	00100095 - Fried Lard	1	210	210	111115	210	Filled
07/16/2055	Forecast	S0000000002 - Wellingham	V100010 - Camfen Foods	00100010 - Tinned Tomatoes	3	210	210	111115	210	Filled
07/16/2055	Forecast	S0000000007 - Heathham	V100003 - Camcom Trading Co	00100026 - Juicy Oranges	24	70	70	111116	70	Filled
07/16/2055	Forecast	S0000000007 - Heathham	V100003 - Camcom Trading Co	00100039 - Spicy Hot Tomatoes *	3	70	70	111116	70	Filled
07/17/2055	Forecast	S0000000003 - Hartbridge	V100000 - Dualcell Produce	00100000 - Spicy Hot Butter	1	30	30	111117	30	Exceeded Max
07/17/2055	Forecast	S0000000003 - Hartbridge	V100000 - Dualcell Produce	00100401 - Juicy Coffee	6	30	30	111118	30	Filled to Minimum

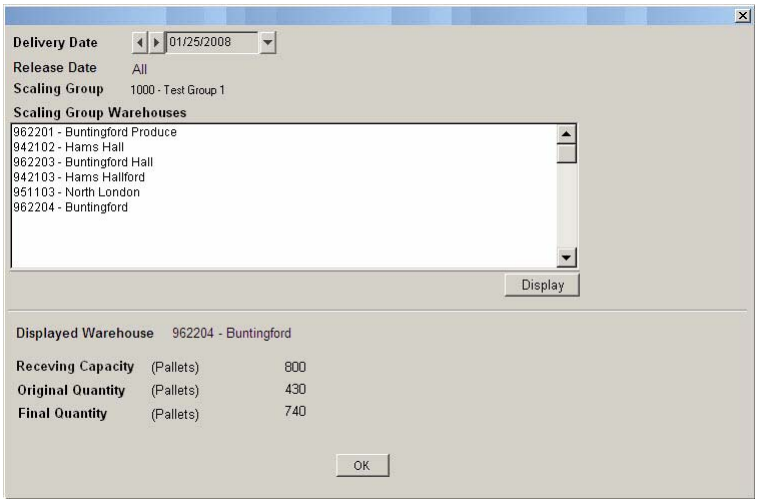
1. Enter the desired Release Date if different than the default.
2. Use the LOV button to select a scaling group or enter a number in the Scaling Group field.
3. Select a Unit of Measure, either Cases or Eaches.
4. Click **Search**.

Smoothing Details Pop-up

The Smoothing Details pop-up is accessed through the Order Management Scaling Group Order Review window and allows you to review the original and final order totals for a warehouse in the scaling group.

Navigate: From Order Management click the Scaling Group Order Review tab. Enter a Scaling Group ID or select one from the List of Values. Click **Smoothing Details**. The Smoothing Details pop-up appears.

Figure 3–10 Smoothing Details Pop-up



Functions

This section describes the functions of the Smoothing Details pop-up.

Smoothing Is Not Enabled

When the Display button and Delivery Date are disabled, smoothing is not enabled for the selected Scaling Group. A message appears stating that smoothing is not performed for the scaling group.

Click **OK** to close the window.

Smoothing Is Enabled

When the Display button and Delivery Date are enabled, you can make the following changes.

To…	Then…
Clear the displayed capacity, capacity UOM, original and final order quantities.	Change the delivery date.
Enable **Display**.	Select a single warehouse and populate the delivery date.
Populate the displayed warehouse label, warehouse receiving capacity and order totals for the selected delivery date and scaling group.	Click **Display**.

Original Quantity

The original quantity is a total of the original order quantities for delivery on the selected delivery date for the scaling group before any smoothing or scaling. The quantity is converted to the capacity type UOM or cases if no capacity is specified.

Original Quantity Rounded

The original quantity rounded is a total of the original order quantities for delivery on the selected delivery date for the scaling group before any smoothing or scaling. If the warehouse receiving capacity quantity UOM is pallets, the pallet total of each order line item is rounded up to an integer before it is added to the total consumed capacity.

> **Note:** The number of cases on the order is not increased. It is simply that a pallet is considered to consume the same amount of space regardless of the number of cases on it. Therefore the pallet representation of the case order quantity is rounded up to an integer.

Final Quantity

The final quantity is the total of the order quantities for delivery on the selected delivery date for the selected scaling group after all smoothing and scaling are complete. The quantity is converted to the capacity type UOM.

Final Quantity Rounded

The final quantity rounded is the total rounded pallet representation of the order quantities for delivery on the selected delivery date for the scaling group after all smoothing or scaling. If the warehouse receiving capacity quantity UOM is pallets, the pallet total of each order line item is rounded up to an integer before it is added to the total consumed capacity.

> **Note:** The number of cases on the order is not increased. It is simply that a pallet is considered to consume the same amount of space regardless of the number of cases on it. Therefore the pallet representation of the case order quantity is rounded up to an integer.

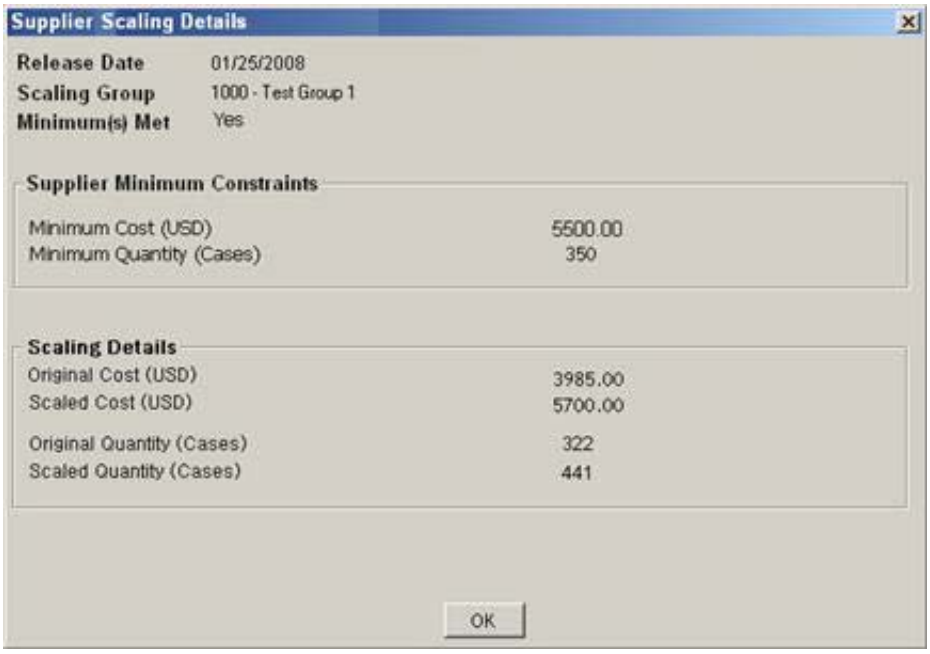
Viewing Supplier Details

Using the Supplier Scaling Details window, you can view the supplier minimum constraints, compared to the original order totals and the post-scaling totals. This view assists you in resolving alerted scaling group/release days.

Note: This view is most useful when only supplier minimums are defined and not container constraints.

Navigate: Log in to Order Management. Select the Scaling Group Order Review tab and follow the instructions for Viewing Orders. Click **Show Supplier Details.**

Figure 3–11 Supplier Scaling Details Window

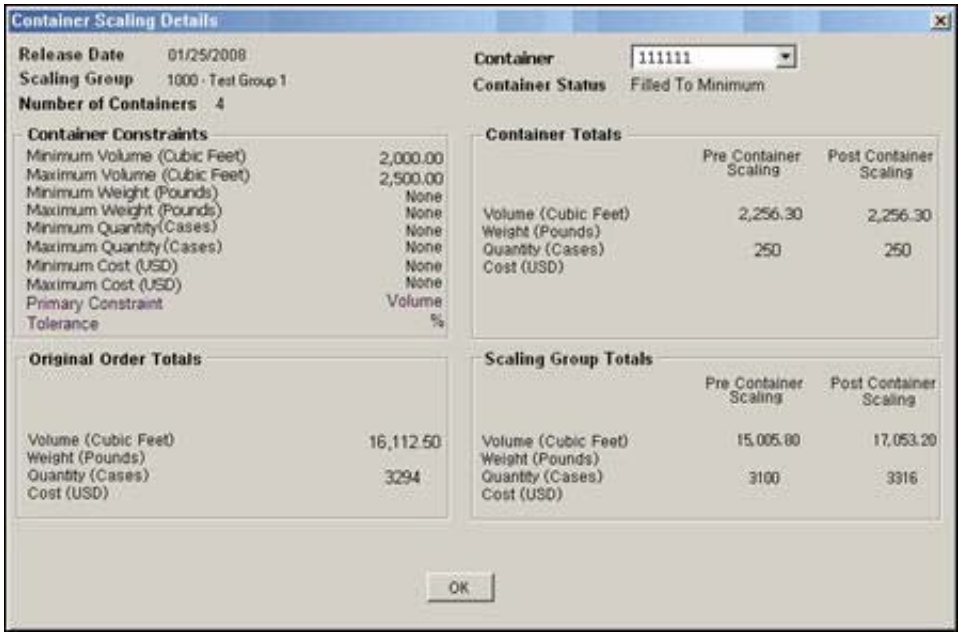


Viewing Container Details

Using the Container Scaling Details window, you can view the Container Constraints, compared to the original order totals and the post-scaling totals. This view assists you in resolving alerted scaling group/release days.

Navigate: Log in to Order Management. Select the Scaling Group Order Review tab and follow the instructions for Viewing Orders. Click **Show Container Details**.

Figure 3–12 Container Scaling Details Window



The Container list has all of the container numbers associated with Scaling Group/Release Date.

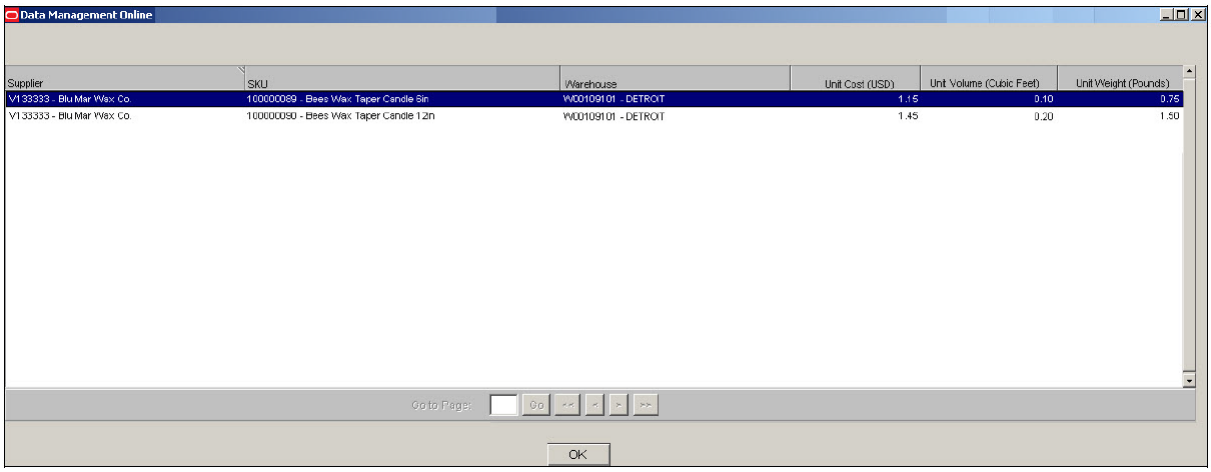
1. To change the container number, select an available number from the Container drop-down list and click **OK**.

Viewing SKU Details

Using the Show SKU Details window, you can view the unit cost, volume, and weight that are used for scaling.

Navigate: Log in to Order Management. Select the Scaling Group Order Review tab and follow the instructions for Viewing Orders. Click **Show SKU Details**.

Figure 3–13 Viewing SKU Details



4

Calculations

The scaling of purchase orders is performed during AIP batch. This process produces scaled receipt plans or purchase orders after replenishment batch has produced the constrained and unconstrained receipt plans.

Smoothing Overview

Every warehouse has a limitation on inbound capacity due to the number of truck slots, and the time and labor that is required to unload a truck. Smoothing in the scaling module will attempt to address the scenario where the inbound warehouse capacity can be broken down by a grouping of SKUs, usually of a supplier.

Setting a warehouse capacity within a scaling group will limit the total scaling group orders into a warehouse on a particular day. To do so, delivery days which have orders in excess of the capacity must be pared-down; not by simply decreasing orders but rather by pushing the orders forward to earlier delivery days. Pushing the orders will cause a domino or waterfall effect as they are pushed one ATP day at a time until enough days are encountered that can absorb the excess receipts. The waterfall method is intended to help ensure that a small number of items are not pushed out many days or weeks making them excessively overstocked.

The capacities can only be enforced if there are days able to absorb the excess. Therefore this process is most successful when the retailer's warehouse inbound plan has peak times with proportionally large or sustained valleys.

The smoothing push of orders on days exceeding the capacity is a precursor to supplier minimum scaling and container scaling. By performing the push first, more days are likely to have already met any supplier minimum. Additionally it ensures that containers are only built and scaled once. Nevertheless, the downstream processes must not allow the warehouse maximums capacity to be broken when attempting to scale.

Scaling Overview

AIP produces an actionable receipt plan based on forecasted demand and stock availability. The receipt plan is actionable because it accounts for/is constrained by receiving calendars, order multiples, and lead times. This is sufficient for retailers who wish to replenish purely based on immediate need. However, a number of retailers negotiate contracts with vendors which either require a minimum purchase or provide financial benefit to the retailer for meeting an agreed minimum purchase (usually specified as a cost, quantity, weight or volume).

The combination of supplier/SKU/destination order quantities that count toward meeting the minimum are heavily dependent upon the business driver behind the minimum and the vendor itself.

In certain scenarios a vendor may have multiple manufacturing or distribution locations created as separate entities in the retailer's merchandising and financial systems and therefore the agreed minimum may be addressed by orders for multiple vendors.

In another scenario the minimum purchase may be required in order for the vendor to sufficiently offset the cost associated with setup and production. In this case the vendor dictates the total production value regardless of where each order is being shipped.

Another important reality to consider is proper transportation management. Transportation management is generally treated as a separate business process from replenishment planning. However, some of the costs associated with the transportation of products may be reduced if the retailer orders quantities that make full use of available container capacity.

AIP is in a unique position to address vendor minimums and to make use of container capacity because of its forward-looking plan. Since AIP has visibility to the future planned need it can make intelligent decisions about what items to select to meet the minimum. AIP can use the future plans to identify what the actual expected need is in the short term, whereas a system which does not have future visibility would have to make an arbitrary decision about which SKUs are ordered to meet the minimum.

The Supplier and Container Scaling functionality is designed to enable retailers to pool orders together to achieve higher efficiencies in their purchasing and logistics functions. The scaled-receipt plans or scaled orders are a list of order quantities by supplier, SKU-Pack, warehouse-chamber, and delivery date. These order quantities are a result of comparing supplier and container constraints to total order quantities for each release day and pulling orders forward, where necessary, to meet the constraints. When scaling is complete the pre-smoothed, pre-scaled totals are visible in Order Management for viewing and comparing to the final order quantities which will reflect any smoothing and scaling that occurred.

Scaling Prep

This section provides information on:

- Derive Container Groups
- Check Dimension Definitions
- Save Original Order Quantity

Derive Container Groups

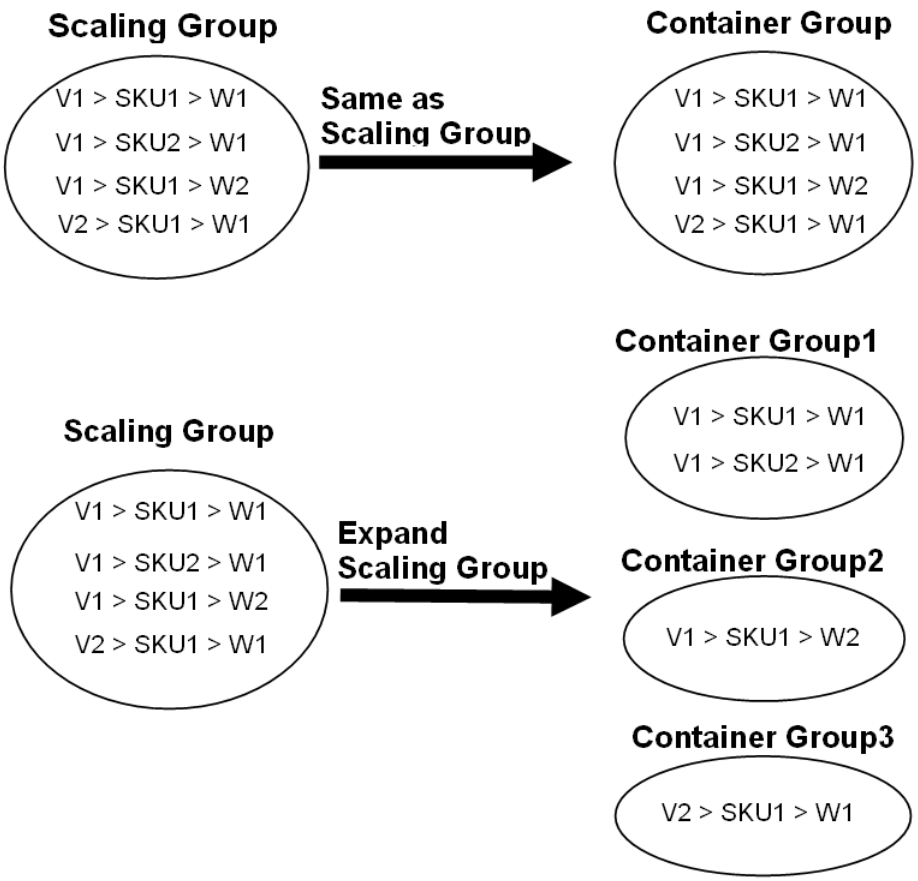
A container group is a grouping of suppliers, SKUs, and warehouses derived from the scaling group specified by the user. The container group is derived by the Container Assignment method set on the scaling group.

Table 4–1 Container Assignment Methods

Container Assignment Method	Description
Same as Scaling Group	Indicates the container group and scaling group assignments are identical.
Expand Scaling Group	Indicates that scaling group assignments are placed in a container group such that each unique source/destination combination is placed in its own container group.

Figure 4–1 illustrates the conversion.

Figure 4–1 Derive Container Groups Example



Scaling groups and therefore container groups are effective by batch run and do not change over the horizon. Container Groups inherit container scaling properties from the scaling group.

Check Dimension Definitions

If the system finds a scaling group constraint specified (cost, volume, weight, pallets) for active smoothing, supplier scaling or container scaling, but is unable to find a related value for any one of today's assignments in the scaling group, effective on the constraint effective date, the scaling group assignments are flagged as invalid for scaling.

Save Original Order Quantity

The original order quantities are saved for each order before scaling is performed. The data is used when viewing scaling group totals in Order Management. Orders for any assignments which have been flagged as invalid for scaling will not count towards the pre-scaling totals viewed in Order Management.

Smoothing

Smoothing is performed after the completion of all Replenishment and Reconciliation functionality and takes Constrained Receipt Plans (planned orders) as inputs. The smoothing module starts at the end of the smoothing horizon and works backward toward today. Smoothing for all days in the smoothing horizon is performed before supplier scaling and container scaling.

In order for the scaling module to perform smoothing for a scaling group the following must be true

- Smoothing must be enabled at the global level and the scaling group.
- The horizon day being smoothed must fall within the scaling group smoothing horizon.
- There must be planned orders on the horizon day being processed. Days with no orders, either as a direct result of planning or of push/pull-forward will not be smoothed. In addition, orders will not be brought onto any day in order get up to the full warehouse capacity.
- There must be one or more assignments in the scaling group that have all required dimensions defined.

Calculate Dimensions

The calculation of the dimensions of a quantity are the same across scaling whether it applies to a total order quantity, an order multiple, or any other quantity that is expressed in terms of cases.

Pallets

Use the pallet multiple that is effective on the order's Delivery Date.

$$\text{Pallets} = \frac{\text{Qty}_{\text{Cases}}}{\text{PalletMultiple}}$$

Rounded Pallets

$$\text{Pallets} = Ceil\left(\frac{\text{Qty}_{\text{Cases}}}{\text{PalletMultiple}}\right)$$

Cases

$$\text{Cases} = \text{Qty}_{\text{Cases}}$$

Units

$$\text{Units} = \text{Qty}_{\text{Cases}} \times \text{SKU PackSize}$$

Total Orders

All orders that have a delivery date of the smoothing day being processed are grouped by scaling group and warehouse, then the order totals of each group are calculated and summed using the standard calculations described previously. When partial pallet rounding is on and the quantity Unit of Measure (UOM) is pallets, the rounded pallet total is calculated by rounding each order line item to full pallets before adding it to the total.

Push Orders to Enforce Warehouse Receiving Capacity

If the order totals are less than the warehouse capacity constraints that are effective on the delivery date, then the warehouse capacity constraint is not broken and no smoothing will occur. If the order totals exceed the warehouse capacity, then some orders must be pushed earlier to reduce the orders to the warehouse receiving capacity. Orders are always pushed to their very next earliest delivery date.

Criteria

Orders which meet all of the following criteria may be moved:

- Orders for a supplier/sku-pack/warehouse in the scaling group which has a delivery date on the day being smoothed. The order must have an earlier delivery date to move to.
- Orders where all or a portion of the order quantity can be moved and the new delivery date is not more days before the Pull-forward Days according to the original delivery date of any quantity being moved.
- Orders that do not cross a stockless day from the original delivery date to the new delivery date. Orders may be moved from a stockless day to a non-stockless day as long it does not cross another stockless day in between, unless the system is configured to allow pulling across stockless days.
- Orders that do not cross a Supplier Purchase Quantity (SPQ) week. Orders will not be moved into or out of an SPQ week.
- If the order multiple changes between the order's original delivery date and the new move-to delivery date there must be a common multiple that is equal to or less than the order quantity.

Least Common Multiple (LCM)

All moved quantities are restricted to a multiple of the move-from and move-to order multiples. The least common multiple (LCM) is used. The LCM of two numbers is the smallest number that is a multiple of both. If the order multiple does not change then the LCM is the order multiple of both the move-from and move-to delivery dates.

Excess Quantity

If the total of the orders is greater than the warehouse receiving capacity, then the amount above and beyond the capacity is the excess. This is the target quantity that needs to move.

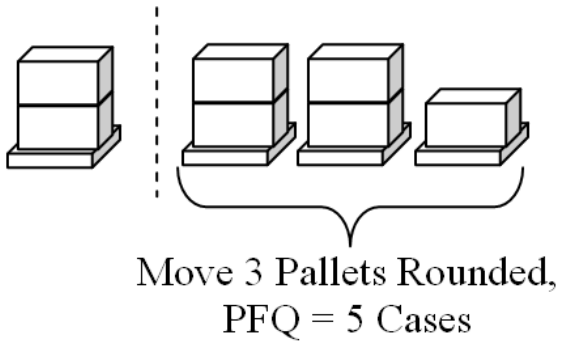
Push-forward Quantity (PFQ)

The push-forward quantity (PFQ) is the number of full cases of an item, in terms of the LCM, that is needed to meet the excess quantity target.

When partial pallet rounding is on the PFQ of an item with a partial pallet, it always includes the partial pallet first and then any additional full pallets needed to meet the excess quantity target. When moving a partial pallet, the excess is decreased by one pallet. However, the PFQ reflects the actual number of cases on the partial pallet.

In Figure 4–2, the receiving capacity has an excess of three pallets.

Figure 4–2 Example of Partial Pallet Rounding and the Push-forward Quantity



The PFQ cannot exceed the original order quantity but may be less than the original order quantity.

At this point the required number of cases of the item needed to achieve the target excess are known, however, the order quantity may be less than that target, or some of the order quantity may be unable to move without breaching the pull forward days limitation.

Because an order quantity can move multiple times, it is necessary to understand how many days the quantity composing that order has moved. For any particular order AIP will always move order quantities in order from those closest to their original delivery date to those farthest.

If you imagine that each delivery date has a queue with the original order quantity at the front of the queue when smoothing occurs, a quantity on the smoothing day is pulled from the front of the queue and added to the back of the queue of the next delivery date. When smoothing, the next delivery date is the quantity at the front of the queue that is moved first and then the next quantity in line as needed. This allows each days moved order quantity to be appropriately limited by the pull-forward days.

The available order quantity is the smallest value of the order quantity rounded down to the nearest multiple of the LCM, or the total quantities that can be moved without breaking the pull-forward days limit.

Figure 4–3 Available Order Quantity Calculation

$$\text{AvailableQty} = Min\left(\begin{array}{l} Floor\left(\dfrac{\text{OrderQty}_{\text{cases}}}{\text{LCM}}\right) \times \text{LCM}, \\ \text{Order Qty passing Pull - forward day limit} \end{array}\right)$$

The PFQ is the smaller value of the order need calculated previously and AvailableQty.

Figure 4–4 PFQ Calculation

$$\text{PFQ} = \min\left(\text{AvailableQ ty}, \text{OrderNeed}_{\text{Cases}}\right)$$

Order Selection

Of the possible orders, only a portion of them may be needed to reduce the days total orders. Orders are sorted in the following order for selection as needed:

1. Difference between current delivery date and new delivery date.
2. Orders that are not comprised of a moved order quantity followed by those that have received a moved order quantity.
3. Total value of PFQ.
4. Total order quantity in units (not limited by the PFQ or any other restrictions).

For the orders being delivered on the smoothing date select, from the prioritized list, the order with the minimum value that meets or exceeds the excess quantity. If the excess cannot be met by moving a single order, then the largest are selected. Repeat the calculation of excess, PFQ, and order selection until there is no more excess on the smoothing date.

Alerting

If the system is unable to move enough orders off of the day, an alert is generated. The alert specifies the scaling group, warehouse, and delivery date that are exceeding the warehouse receiving capacity after smoothing.

Scaling

Scaling is performed after completion of Smoothing, if enabled. Scaling has two distinct modules—Supplier Scaling (SS) and Container Scaling (CS). For each day the supplier scaling module runs before container scaling.

In order for the scaling module to perform scaling for a scaling group/container group the following must be true:

- The module must be enabled at the global level and the scaling group/container group level.
- The horizon day being scaled must fall within the scaling group or container group scaling horizon.
- There must be planned orders on the horizon day being processed. Days with no orders, either as a result of pull-forward or sufficient inventory, will not be scaled.
- There must be one or more assignments in the scaling group/container group that have all required dimensions defined.

Supplier Scaling

This section provides information on calculating dimensions for Supplier Scaling.

Calculate Dimensions

The calculation of the dimensions of a quantity are the same across scaling whether it applies to a total order quantity, an order multiple, or any other quantity that is expressed in terms of cases.

Volume

$$\text{Volume} = \text{Qty}_{\text{Cases}} \times \text{SKUPackSize} \times \text{Volume}_{\text{Units}}$$

Weight

$$\text{Weight} = \text{Qty}_{\text{Cases}} \times \text{SKUPackSize} \times \text{Weight}_{\text{Units}}$$

Cost

$$\text{Cost} = \text{Qty}_{\text{Cases}} \times \text{SKUPackSize} \times \text{Cost}_{\text{Units}}$$

Pallets

Use the pallet multiple that is effective on the order's Delivery Date.

$$\text{Pallets} = \frac{\text{Qty}_{\text{Cases}}}{\text{PalletMultiple}}$$

Rounded Pallets

$$\text{Pallets} = Ceil\left(\frac{\text{Qty}_{\text{Cases}}}{\text{PalletMultiple}}\right)$$

Cases

$$\text{Cases} = \text{Qty}_{\text{Cases}}$$

Units

$$\text{Units} = \text{Qty}_{\text{Cases}} \times \text{SKU PackSize}$$

Total Orders

All orders that have met their lead time on the release day being processed are grouped by scaling group, then the order totals are calculated and summed using the standard calculations described previously. When partial pallet rounding is on and the quantity UOM is pallets, then the rounded pallet total is calculated by rounding each order line item to full pallets before adding it to the total.

Pull Forward Orders to Meet Minimum

If all order totals are equal to or greater than the supplier scaling constraints that are effective on the release date then all supplier minimums are satisfied. If one or more supplier scaling constraints are not met, pull forward orders to meet the remaining unmet constraints.

Criteria

Orders which meet all the following criteria may be pulled forward:

1. Orders for a supplier/sku-pack/warehouse in the scaling group which has a release date on the day being scaled. The release schedule for the supplier/sku-pack/warehouse must have a delivery date with a lead time that results in release/ordering on the day being scaled. The new delivery date must also be earlier than or the same date as the order's original delivery date.
2. Orders with an existing delivery date where the date to which they could be pulled forward is not more than the pull-forward number of days before the existing delivery date.
3. Orders that do not cross a stockless day from the original delivery date to the new delivery date. Orders may be pulled from a stockless day to a non-stockless day as long as it does not cross another stockless day in between, unless the system is configured to allow pulling across stockless days.

4. Orders that do not cross a Supplier Purchase Quantity (SPQ) week. Orders will not be pulled into or out of an SPQ week.
5. If the order multiple changes between the order's original delivery date and the new pull-to delivery date, there must be a common multiple that is equal to or less than the order quantity.

Least Common Multiple (LCM)

All pull-forward quantities are restricted to a multiple of the pull-from and pull-to order multiples. The LCM is used. The LCM of two numbers is the smallest number that is a multiple of both. If the order multiple does not change, then the LCM is the order multiple of both the pull-from and pull-to delivery dates.

Remaining Need Percentage

If more than one minimum has been defined, the system will compare the two to determine which is farthest from being met. The remaining amount of a minimum not yet achieved is the remaining need. The remaining need compared to the minimum provides a percentage by which to compare various minimums.

The supplier minimum with the largest remaining need percentage is the primary target of each pass of the order selection.

Pull-forward Quantity (PFQ)

The PFQ is the number of full cases, in terms of the LCM, that is needed to meet the remaining need of all minimums. The PFQ cannot exceed the original order quantity but may be less than the original order quantity.

Table 4–2 Calculation Steps for PFQ

Step	Description	Example
1	Calculate the value of one LCM for each constraint value.	$\text{LCMCost} = \text{LCM} \times \text{SKUPackSize} \times \text{Cost}_{\text{Units}}$
2	Calculate the number of full LCMs needed to meet each constraint.	$\text{LCMCostNeed} = Ceil(\text{RemainingCost} \div \text{LCMCost})$
3	The actual need to meet all constraints is the maximum number of LCMs.	LCMsActual = Max(LCMCostNeed, LCMPalletNeed, LCMCaseNeed, LCMUnitNeed)
4	The need in terms of cases is the number of LCMs needed multiplied by the LCM which is a number of cases.	$\text{OrderNeed}_{\text{Cases}} = \text{LCMsActual} \times \text{LCM}$
5	The available quantity is the smaller value of the order quantity rounded down to the nearest multiple of the LCM, or the order quantity limited by pull-forward days.	$\text{AvailableQty} = Min\left(Floor\left(\frac{\text{OrderQty}_{\text{cases}}}{\text{LCM}}\right) \times \text{LCM},\ \text{Order Qty passing Pull-forward day limit}\right)$
6	The PFQ is the smaller value of the OrderNeed, AvailableQty, and available warehouse receiving capacity on the new delivery date.	Not applicable

Order Selection

Of the possible orders, only a portion of them may be needed to meet the supplier minimums. Orders are sorted in the following order for selection as needed:

1. Earliest original release date to latest release date.
2. Orders that are not comprised of a moved order quantity followed by those that have received a moved order quantity.
3. Total value of PFQ of the constraint with the largest remaining percentage need. Then, the total PFQ value of the next largest remaining need, if more than one constraint is defined.
4. Total order quantity in units (not limited by pull-forward days or any other restrictions).
5. Difference between original and new delivery date.

For the earliest available original release date select, from the prioritized list, the order with the minimum value that meets or exceeds the constraint with the largest remaining percent (that is, the order that gets closest to the constraint).

If the largest remaining percentage cannot be met by a single order then the largest is selected. If multiple orders have the same value, then repeat the selection for the next largest remaining percentage. Repeat the calculation of remaining need, and PFQ, and order selection until all supplier constraints are met.

Container Scaling

The goals of Container Scaling are simultaneously:

- Assign orders for a particular release date to the least number of containers.
- Assign orders for a destination to the least number of containers.
- Meet at least one of the minimum constraints in each container.

After the necessary Smoothing and Supplier Minimum Scaling has been performed, Container Scaling can be performed. The aim of Container Scaling (CS) is to break up orders, or portions of an order, into groupings that represent containers. The following rules are applied when assigning orders to containers:

- An order may be assigned to more than one container.
- A container assigned to an order will have at least one Order Multiple's worth of the order. This is because the Order Multiple is the smallest quantity of the product that can be moved and manipulated while ordering and packing containers.
- The groupings of orders will not exceed any of the maximum constraints defined for the SG on the release date.

If any container is partially filled it must meet at least one of the specified minimums otherwise the system must look to future days to find orders that can be pulled forward to satisfy a container minimum.

Orders for a CG that have a release day equal to the day being scaled must be built into a container no later than that release day. Order quantities are placed in a container by Smallest Ordering Unit (SOU). The purpose of breaking order quantities into their SOU is to enable the placement of orders into containers of a finite size, in the most efficient manner. Packing is most efficient when working with the most granular object. An SOU is the most granular quantity of a product that is manipulated in scaling. Once Orders are broken into SOUs, the size, in terms of the container group constraints, of each is then calculated so that when it is placed into a

container, exactly how much of the constraint it consumes is known. The way in which SOUs are assigned to a container will follow a modified First Fit Decreasing method. The traditional First Fit Decreasing method requires that the SOUs be sorted in decreasing order of a single primary constraint in order to achieve the best results. However, it is important that the orders to a particular destination be placed into the same container when possible. Therefore, placement of SOUs will first consider destination, and then constraint size. Ultimately an SOU is placed on the first container found that has room and does not violate the container rules.

Build Full Containers

All orders that have met their lead time on the release day being processed are grouped by container group for building into containers.

Smallest Ordering Unit (SOU)

Following is the process to group and sort SOUs to build into containers.

1. Break Orders into SOUs.

   The order multiple is a quantity, in cases, that the order quantity must be a product of. That is, the order quantity (in terms of cases) must be evenly divisible by the order multiple. It is typically a number that is equal to half of a pallet or some multiple of a full pallet (one or more). Replenishment into-the warehouse is planned in terms of Order Multiples. It is deemed the smallest unit of quantity that can be ordered from the supplier, and therefore also placed in a container. All orders are broken into its component SOUs for loading into containers.

   Each SOU that results from an order being broken down inherits a number of properties from the order from which it came—namely the Source, the SKU, the Pack-size, the Destination Chamber, the Delivery Date, and Release Date (the unique identifiers of the order it was derived from).

$$\text{SOU} = 1\ \text{Order Multiple}$$

   Each SOU has a case quantity equal to one Order Multiple.

   Note: The order multiple that is effective on the order Delivery Date should be used.

$$\text{NumberOfSOUs} = \frac{\text{Qty}_{\text{Cases}}}{\text{Order Multiple}}$$

2. Calculate SOU Value.

   In order to sort the SOUs, the constraint values of one SOU must first be known. After the orders are split into SOUs the amount of each constraint that the SOU contributes is calculated for the specified container constraints. The standard cost, weight, volume, and quantity calculations described previously are used here with a quantity value of one SOU.

3. Sort SOUs.

It is important that the orders to a particular destination be placed into the same container, when possible, in order to minimize the amount of stops/unloads. Placement of SOUs will first consider destination.

The SOUs must then be sorted according to the most constraining value so that the largest items are loaded first. The most constraining value is the one that the container typically achieves first. This may be any of the constraints that are enterable in AIP—Volume, Weight, Cost, Pallets, Cases, or Units. The primary container scaling constraint is specified by the user.

SOUs within a Container Group are sorted by:

Order	Description
1	Destination code, increasing.
2	Container Group Primary Constraint, decreasing.
3	Delivery Date, increasing
4	Parent Order of the SOU (this is equivalent to sorting by Source/SKU-pack. This is relevant to keeping multiple SOUs of the same parent order together).

Build Container

A container is a logical entity that contains groupings of SOUs. An SOU is simply some portion of a full order, therefore a container is a grouping of full or portions of Orders.

Containers will:

- Know which container group's Scaling Group and release date it was created for.
- Be uniquely identifiable from other containers built for the same Scaling Group and Release Date.
- Know which Order's SOUs belong to it.
- Have a pre-scaled order quantity set after supplier scaling but before any container scaling pull-forward occurs. This value is saved for later review by the user.
- Have a Status of Open, Filled, Filled to Minimum, or Exceeded Max.

When building a container, the following rules and assumptions will apply:

- A container is assumed to pick-up from all sources on the same release day.
- A container is assumed to route to different destinations based on lead times of sku-packs contained within the container. However, AIP will not do any intelligent routing. The lead time between one source and one destination is assumed to take into account any routing time between destinations.
- A container will not visit a destination twice. Therefore, if two SKUs delivered to a destination (from the same or different sources) have different lead times, they cannot be loaded in the same container.

Now that the SOUs have been appropriately sorted and the value of each has been calculated for each constraint, load the SOUs one-by-one by checking the open containers to determine if the SOU fits in the remaining space. Place the SOU into the first open container that has space, without exceeding any maximum constraints. If there are no containers open that the SOU fits into, open a new container.

Before any quantity can be placed in a container it must fit without exceeding the maximum container constraints, and the destinations being served by the container's orders are valid to be loaded with the SOU.

To see if the quantity fits in the open container:

1. Determine if any chambers of the destination's parent warehouse is already assigned to the container with a different lead time (delivery date). If so the quantity does not fit.
2. When partial pallet rounding is on and pallet quantity is a container constraint, decrease the current container total by the rounded partial pallet of any existing order quantity of the same order line item.

   Example: Load 1.5 pallets of Grape - 24 into containers

   Container 1: Quantity Maximum 22 pallets

Table 4–3 Example for Container Fit

Supplier	SKU-pack	Warehouse	Delivery Date	Order Quantity (converted to pallets)	Pallet Rounded Order Quantity
1000 - Beverage Corp	Cola - 24	2 - East Coast	12/31/2055	15	18
1000 - Beverage Corp	Lime - 24	2 - East Coast	12/31/2055	2.75	3
1000 - Beverage Corp	Grape - 24	2 - East Coast	12/31/2055	.5	1

Available Space = Pallet Rounded Order Quantity - Order Quantity (converted to pallets) = .5 pallets. Add .5 pallets to the current container totals when checking the available space for order item Grape - 24.

Note: Another .5 pallets of Grape-24 can be placed into Container 1 without exceeding the maximum capacity.

3. Check the maximum container constraints against the current container totals plus the unrounded totals of the quantity being added. If the container totals exceeds any one of the maximum constraints when the quantity is added, that quantity does not fit.

   Note: If an SOU does not fit in a newly opened container without exceeding the maximums, the SOU is excessively large for the container. The container maximums were likely entered wrong, or a SKU dimension is inaccurate. The SOU is placed into a new container and the status set to *Exceeded Max*. An alert is generated for the Scaling Group and earliest release date encountering the issue.

After placing an SOU into a container, perform the necessary partial pallet rounding of the line item and then check the container maximums and tolerance to determine if at least one has been met. If so, set the container status to *Filled* and remove it from the list of open containers.

Once all SOUs for the release day have been placed into containers, check the open containers to determine if the minimums have been met. If no minimums are

defined, or one of the minimums has been met then the container is full enough and can be closed. The container is set to a status of *Filled to Minimum*.

Pull Forward Orders to Meet Minimum

When all orders for the release date have been loaded into containers, additional orders must be pulled-forward to fill any open containers to the smaller value of the minimum or tolerance.

Criteria

Orders which meet all the following criteria are potential candidates for pull-forward:

1. Orders for a supplier/sku-pack/warehouse in the container group which has a release date on the day being scaled. The Release Schedule for the supplier/sku-pack/warehouse must have a delivery date with a lead time that results in release/ordering on the day being scaled. The new delivery date must also be less than or equal to the order's original delivery date.
2. Orders with a existing delivery date where the date to which they could be pulled forward is not more than the pull-forward number of days before the existing delivery date.
3. Orders that do not cross a stockless day from the original delivery date to the new delivery date. Orders may be pulled from a stockless day to a non-stockless day as long it does not cross another stockless day in between, unless the system is configured to allow pulling across stockless days.
4. Orders that do not cross a Supplier Purchase Quantity (SPQ) week. Orders will not be pulled into or out of an SPQ week.
5. If the order multiple changes between the order's original delivery date and the new pull-to delivery date, there must be a common multiple that is equal to or less than the order quantity.

Least Common Multiple (LCM)

All pull-forward quantities are restricted to a multiple of the pull-from and pull-to order multiples. The LCM is used. TheLCM of two numbers is the smallest number that is a multiple of both. If the order multiple does not change, then the LCM is the order multiple of both the pull-from and pull-to delivery dates.

Remaining Need Percentage

If more than one minimum, or a minimum plus a tolerance, has been defined, the system will compare each to determine which is closest to being met. The remaining amount of a minimum or tolerance not yet achieved is the remaining need. The remaining need compared to the minimum (or tolerance) provides a percentage by which to compare various minimums. The minimum or tolerance with the smallest remaining need percentage is the primary target of each pass of the order selection.

Pull-forward Quantity (PFQ)

In an effort to pull-forward the smallest quantity of an order that will meet one constraint, the PFQ is the smallest number of full cases, in terms of the LCM, needed to meet the smallest remaining need. The PFQ cannot exceed the original order quantity but may be less than the original order quantity.

Table 4–4 Calculation Steps for PFQ

Step	Description	Example
1	Calculate the value of one LCM for each constraint value.	$LCMCost = LCM \times SKUPackSize \times Cost_{Units}$
2	Calculate the number of full LCMs needed to meet each constraint.	$LCMCostNeed = Ceil(RemainingCost \div LCMCost)$
3	The actual need to meet all constraints is the maximum number of LCMs.	LCMsActual = Max(LCMCostNeed, LCMPalletNeed, LCMCaseNeed, LCMUnitNeed)
4	The need in terms of cases is the number of LCMs needed multiplied by the LCM which is a number of cases.	$OrderNeed_{Cases} = LCMsActual \times LCM$
5	The available quantity is smaller value of the order quantity rounded down to the nearest multiple of the LCM, or the order quantity limited by pull-forward days.	$AvailableQty = Min\left(Floor\left(\frac{OrderQty_{cases}}{LCM}\right) \times LCM, \; OrderQty\ passing\ Pull\text{-}forward\ day\ limit\right)$
6	The PFQ is the smaller value of the OrderNeed, AvailableQty, and available warehouse receiving capacity on the new delivery date.	Not applicable

Order Selection

Of the possible orders, only a portion of them may be needed to meet the container minimum. Orders will always be pulled from the earliest original release date to latest. For a particular release date the orders will first be broken into two subsets. The first will contain orders for destinations already in the container. The second will contain all the other possible orders. The first subset is exhausted before selecting orders from the second.

Orders within each subset are sorted in the following order for selection as needed:

1. Orders that are not comprised of a moved order quantity followed by those that have received a moved order quantity.
2. Total value of PFQ of the constraint with the smallest remaining percentage need. Then, the total PFQ value of the next smallest remaining need, and so forth, if more than one constraint is defined.
3. Total order quantity (not limited by PFQ or any other restrictions).
4. Difference between original and new delivery date.

From the sorted list, select the order with the smallest PFQ value that meets or exceeds the constraint with the smallest remaining percentage need (that is, the order that gets closest to the constraint). If the smallest remaining percentage cannot be met by a single order then the largest PFQ is selected.

The selected order and PFQ must meet the same load criteria as those required orders/SOUs with a release date equal to the scaling date. However, in this case of the

PFQ doesn't fit without exceeding a maximum, the PFQ is reduced until it fits or it is 0. That is:

1. Determine if any chambers of the destination's parent warehouse are already assigned to the container with a different lead time (delivery date). If so, the order cannot be loaded.
2. Check the maximum container constraints against the current container totals plus the totals of the quantity being placed. When partial pallet rounding is on and pallet quantity is a container constraint, decrease the current container total by the rounded partial pallet of any existing order quantity of the same order line item. If the container totals will exceed any one of the maximum constraints when the quantity is added, then that quantity does not fit. Reduce the quantity by the number of cases equal to one LCM until the order fits or is 0.

After placing an order line item into a container, perform the necessary partial pallet rounding of the line item and check the container constraints and tolerance to determine if at least one has been met. The container status is set to *Filled* if a maximum or tolerance is met, or *Filled to Minimum* if a minimum is not met. Remove the container from the list of open containers.

Repeat the calculation of remaining need, and PFQ, and order selection until the container is not open or there are no more valid orders. Repeat the process for each open container.